ICL7502
PT7 X
You have a choice. Consider the alternative.
FERRANTI

COMPUTER WEEKLY

Turn UK into another California, says Sir Keith

AN ECONOMIC climate which will encourage successful high technology entrepreneurs to become venture capitalists must be established in the UK, according to Industry Secretary Sir Keith Joseph. At the opening of new London offices by the Leeds-based systems builders, Systime, Sir Keith said that the government is "trying to bring about a less hostile climate for business."

Sir Keith had obviously been impressed by his first meetings with venture capitalists, on his recent trip to California.

He said he was struck by how many of them in California were British and by how many were technologists who had turned themselves into financiers. In the UK such people are discouraged by taxation and low profit levels, he said, but he aims to turn the UK into another California.

Sir Keith also commented on the difficulty Systime had had in getting backing when it started. Although the fact that the money eventually came from the National Enterprise Board was "not exactly a delight for me," Sir Keith said, it was true that the merchant bankers in the City "did not understand the computer industry."

Rohan Computing
DEC LA34
DEC VT100
Ex-stock
Ring for price
Tel: Southam (09265) 4045

NEWS IN BRIEF

Quest buys CIL

QUEST Automation of Ferndown, Dorset has bought Computer Instrumentation from the US-owned University Computing Co. CIL, based at Chandler's Ford, Hants manufactures pen plotters for customers that include Quest itself, which uses them in its Q-Draft family of computer aided drafting equipment.

System X dispute

PICKETING continues at GEC Telecommunications at Stoke, Coventry where 250 System X development engineers have been locked out during negotiations on pay and working conditions. The men, members of ASTMS, believe that technology could cut their jobs by up to 30%.

Threat to jobs

THE current lack of spending power threatens to cause more unemployment and problems than any introduction of new technology, says a report from the Amalgamated Union of Engineering Workers' Technical, Administrative and Supervisory Section, entitled A Guide For Negotiators.

Sample EEPROMs

SAMPLE deliveries of Hitachi's 16K-bit EEPROM (electrically erasable programmable read only memory) are planned to start this month. Volume production is to start the third quarter of this year. The chip is designated HN48010 and has a maximum access time of 350ns.

2900 services gap left by BOC is filled

FOLLOWING the decision by BOC Datasolve to drop out of the 2900 services business (CW, June 19) the bureau's VME/B contracts, mainly conversion jobs, have been taken over by two organisations — Computel of Bracknell, Berks and a new company in this field, Great Western Computing of Swindon, Wilts. But Datasolve is still looking for a buyer for its ICL 2972 mainframe.

Great Western uses W. H. Smith's ICL 2976 at Swindon to provide VME/B services for its clients and plans to open a customer centre in London in the autumn equipped with remote job entry and interactive terminals that will be used by customers to access the Swindon mainframe.

Meanwhile, to cover the period before the London centre opens Great Western has installed terminals linked to Swindon at Datasolve's Sunbury-on-Thames centre to enable former Datasolve customers, who have been carrying out their conversion work at the Sunbury site, to carry on working there.

Great Western managing director, Alan Halfacre, worked with the VME/B operation at W. H. Smith before setting up GW.

Another move that could be of interest to the 2900 user community is a proposal by the Computel bureau of Bracknell, Berks, to set up what it calls the "2900 Standby Club." This would enable members to maintain their own back-up systems at Bracknell with periodic trials of the standby procedures.

CIG to get first Euro 8 mips Hitachi

THE first European customer for the eight million instructions per second Hitachi processor soon to be launched by National Advanced Systems is set to be Centre d'Informatique Générale, CIG, the Belgian owned computer services group that has just bought the Lowndes-Ajax bureau (CW, June 12).

CIG International director Daniel Van der Plassche told Computer Weekly that the 8 mips Hitachi machine would be installed at CIG's Brussels bureau centre later this year to replace an IBM 370/158. The increase in processing capacity would naturally be very considerable.

The 8 mips machine is a version of Hitachi's M200H processor and was originally going to be sold by Itel, which launched it as the AS/8-7034 last year (CW, July 19, 1979) not long before dropping out of the IBM compatible processor business.

Its relaunch by National was delayed because of the expected H Series launch by IBM. But National has decided to go ahead regardless (CW, June 12) a move which now seems safe in view of the life prolonging enhancements for the 303X processors just announced by IBM (CW, June 19).

CIG's plans for Lowndes-Ajax include making its services available to CIG customers on the Continent over CIG's own data communications network. Van der Plassche said that two of the bureau's services of particular interest were the Simplan corporate modelling system and a personnel management service based on the System 2000 database management system from MRI.

Because of Peter Merrick's departure earlier this year, one of Van der Plassche's first tasks was to find a new managing director. Nick Rowe, formerly European president of the American Express card division at Brighton, has been appointed. Rowe worked for ICT between 1964 and 1968 and then set up the Hoskyns operation in New York.

Big losses on WP cause Wordstream closure

WORDSTREAM, the word processing operation of Management Assistance Inc in the US (MAI), is being closed down after running at losses of about $10 million a year. MAI is concentrating its resources on linking data and word processing and is shortly introducing its Dataword II package for the Basic Four small business system into the UK.

Wordstream was a shared-logic word processor using floppy discs instead of hard discs and this unusual configuration failed to catch on in the US although it did better in other countries such as West Germany. The company has decided the future lies in combining word and data processing, although it will continue to support Wordstream customers.

The package for the Basic Four, already launched in the US, will be called Datawrite here. It requires the addition of special full page (A4) screens and a daisy wheel printer to the Basic Four. WP and DP can then be carried out simultaneously.

BASF to join PCM race

LATEST entrant in the [illegible] compatible processor [illegible] West German chemicals [illegible] BASF which, as exc[illegible] reported (CW, April 24) [illegible] market medium and [illegible] IBM compatible main[illegible] from Hitachi in Europe and [illegible] in South America.

The agreement is thought [illegible] cover Hitachi's M-170 [illegible] and M-200 models, the latter [illegible] being marketed by [illegible] Computers and by [illegible] Semiconductor's [illegible] sidiary.

The Japanese company [illegible] Fujitsu, has developed its [illegible] compatible version of MVS [illegible] BASF plans to offer [illegible] machines with IBM op[illegible] software.

The agreement excl[illegible] US, where Hitachi is [illegible] to be planning to e[illegible] mainframe market [illegible] own name. Fujitsu has [illegible] up with TRW to sell [illegible] computers in the US (CW [illegible] 12) but is, at present, [illegible] from the large-scale US [illegible] frame market by its [illegible] with Amdahl Corp.

Fujitsu sells its [illegible] to the big Hitachi [illegible] through Siemens in [illegible] continental Europe.

Receiver called in at Abacus

BUYERS are being sought for Abacus Computers, the London-based micro systems and peripheral distributor, where the receiver has been called in by its bank.

The company had reached the limit of its borrowing facility and majority shareholder John Kennedy, City financier and an Abacus director, was not prepared to extend his investment.

Potential buyers have already been approached by receiver Bernard Phillips & Co, where David Buchler said he was eager to hear from possible purchasers on 01-580 0784.

Abacus managing director Derek Rowe told Computer Weekly that a new backer had been sought for some time. Last November, Shaw Financial, a Texas-based holding company, was near to taking over (CW, November 1, 1979) but eventually decided against the investment. The group is a major Abacus supplier.

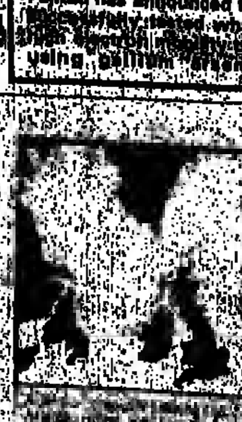
Abacus is said to be [illegible] shape and it is under[illegible] could be bought for [illegible] £50,000 plus sufficient [illegible] keep it going.

'25 times faster' transistors

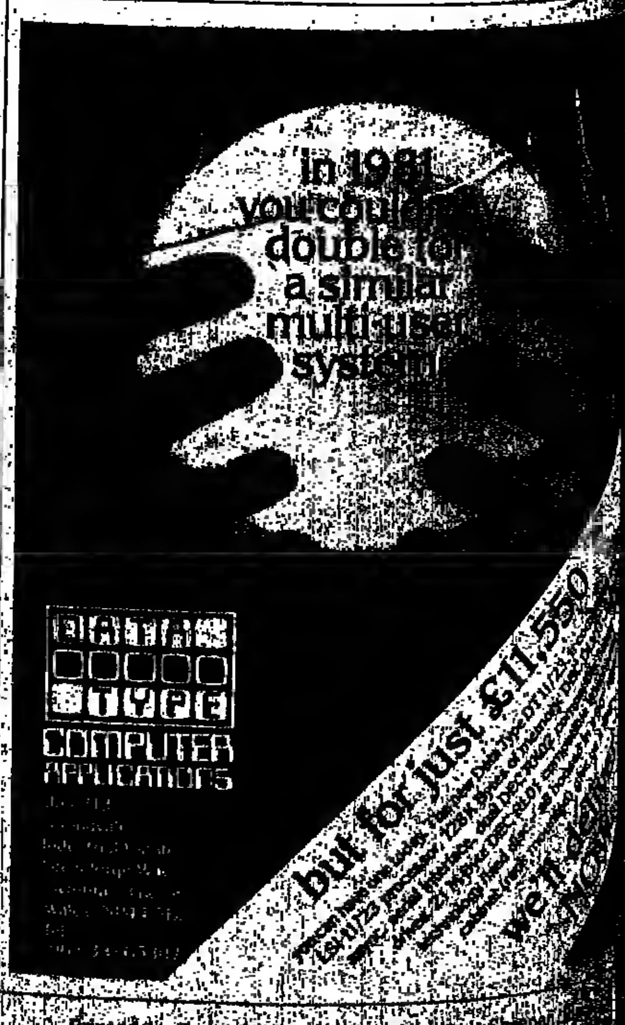
GALLIUM arsenide is far more likely than supercooled Josephson junctions to become the basis of the next major generation of computer components, and Fujitsu has announced that it has successfully tested what is calls [illegible] using gallium arsenide and gallium-aluminium arsenide.

It is said that electrons move 25 times faster in these devices than in silicon transistors. However, it will be several years before the new components are available as there are many production problems to be [illegible]

OLIVETTI TERMINALS from COMMA COMPUTERS
Olivetti TC485 KSR 132col 60cps
Special Offer £1,195
Olivetti TC485 ASR 132col 60cps with paper tape reader/punch
Special Offer £1,095
COMMA COMPUTERS LTD
BRENTWOOD (0277) 811131



AVAILABLE IMMEDIATELY
IBM 3033 N12
Call Atlantic for Flexlease terms on:
01-583 9481



Printed in Great Britain by [illegible] and published by [illegible]

to ensure first class service, top quality and total dependability
Contact [illegible]
manufacturers of High Quality COMPUTER FORMS
Rush Deliveries Are Our Speciality
NATIONAL WORKS
HALL STREET, DUDLEY
WEST MIDLANDS
DUDLEY (0384) 213061

COMPUTER WEEKLY

Number 713 Thursday, July 3, 1980 Price 20p

UNIVERSITY OF JORDAN LIBRARY

NL NEWBURY
Smart Visual Display Terminals
Prices from £495

Briefing

NEB places Ferranti stake

BOWING to pressure from Scottish MPs, the National Enterprise Board has abandoned its plans to sell its 50% stake in Ferranti to the highest bidder and has, instead, offered most of its holding for sale through a group of stockbrokers. The shares will be placed with institutions which must agree to hold them for two years, guaranteeing Ferranti a period of independence.

Some 400,000 shares are being retained for sale to Ferranti workers. The NEB paid £8.7 million for its stake and should raise £54 million from the sale.

● See Company News, page 21.

Nigerian coup

ICL has won an order worth £670,000 from the First Bank of Nigeria for 60 of its 1500 series terminals. They will be used for data capture and local processing in the bank's 30 branches in the Lagos and Ibadan areas and will transmit data to the bank's ICL 1901T and 1902T computers.

Tank standard

FERRANTI'S F100-L 16-bit microprocessor and its family of support chips have been chosen as standard for use in processor-based subsystems in the British Army's planned main battle tank, of which 1,000 are to be built.

Circuit lottery

A LOTTERY is to be held for the remaining circuits on an RCA satellite which is to be launched soon to replace the one lost earlier this year.

Intel unveils high-level plans

INTEL'S plans for the next three years, announced at the company's Fair at the Wembley Conference Centre last week, stress high-level languages, microcoded operating systems and large program sizes.

Planned products, revealed in Computer Weekly last month (Micro News, June 19), include two new versions of the 8086 16-bit micro, and a 32-bit two-chip set.

The same kinds of software development problems which have hampered IBM are hindering Intel's development effort, and although samples of the 32-bit iAPX 432 will be available at the end of the year, no software will be available until the end of next year.

The device will be programmed entirely in high-level languages, with the systems implementation language a superset of ADA, itself based on Pascal. Other planned languages are Cobol and Fortran and there will be no assembly language.

The two more powerful versions of the 8086 are the iAPX 186, offering a higher level of integration and lower cost, and the iAPX 286, offering much higher performance. Again only parts of the RMX-86 operating system are so far available.

Intel's move to put substantial parts of the iAPX 432 operating system into microcode threaten to lock users into Intel software in just the same way as users of IBM's large systems are locked into IBM software.

DoI backs PAYE net test run

AS part of its efforts to persuade the government to apply its single tender policy to the Inland Revenue's huge PAYE project ICL is carrying out simulation of a 1,000-terminal network on a big 2900 machine running under VME/B with IDMSX and the teleprocessing system, TPMS100.

First described in Computer Weekly early last year (CW, March 29, 1979), the PAYE scheme will ultimately involve more than a dozen large scale installations each supporting up to 1,400 terminals.

The simulation is part funded by the Department of Industry which strongly favours a single tender approach for the PAYE project. Not surprisingly, ICL's competitors like IBM, Burroughs and Honeywell want the contracts to go out to tender and from January next year the single tender policy should technically end under EEC rules.

The simulation work is taking place at the West Midlands Gas computer centre at Solihull, Warwicks, where 1,000 terminals are being simulated by an ICL internal development tool called Communications Test Generator. The generator runs on dual Communications Network Processors which are linked by simulated remote communications lines to the site's 2976 which is shared by ICL and West Midlands Gas.

For each terminal being simulated the generator can call on a variety of input message sequences, known as "scripts". These are stored on disc and include such factors as operator wait times which are continually modified.

One of the latest entrants in the IBM compatible processor stakes is the Elbit Anet, seen here under test at the company's plant in Haifa, Israel. Built into the same desk unit as Elbit's Past business computer, the Anet processor, which comes in three models covering the power range of the IBM 370/125 to 148, is completely contained in housing beneath the display.

● The Elbit story — Page 16.

ICL staff vote to strike

STAFF at ICL have rejected the company's offer of 12% and voted overwhelmingly for a one-day strike today (Thursday) and a ban on overtime. About 20,000 are affected by the pay awards being negotiated and ASTMS claims a membership of 9,000, while others are members of APEX, TASS, ACTSS and EESA.

A further meeting of delegates from the unions is planned for next Monday to discuss escalating the action to include a ban on contract work and selective strikes. A £1 a head voluntary levy has already been started to support the selective strikes.

Tim Webb of ASTMS said: "This is our first national dispute with the company and we regret having to take this action particularly because ICL needs the support of its staff during the negotiations on the Internal Revenue contract."

An ICL statement said the company wanted to meet the negotiating committee to seek "any possible routes to reach a solution which will not prejudice the company's competitive position."

Top men quit at Infoline

UPHEAVALS are continuing at Infoline, the online retrieval service rescued from financial collapse by Robert Maxwell's Pergamon Press (CW, June 19), with decisions to change the computer and bureau used, and probably the operating software as well, and the resignation of two senior staff. The switch to an IBM 4300 at Scicon from GSI's Univac 1100 is likely to mean the ditching of the Basis software, on which Infoline had spent a great deal of development effort.

Infoline director David Martin and marketing manager Jeremy Sergeant have both resigned, and may be followed by other staff.

The advisability of switching machines and retrieval software was already being looked at. Alternative retrieval software packages now being considered are those already in use with Infoline's competitors: Dialog from Lockheed, Orbit from SDC, and IBM's own Stairs. Basis, originally developed at Battelle Institute in the US, was found to have serious difficulties in handling the large files (two or three million records) that Infoline needs to provide. There is, however, an IBM version of Basis that could be used.

Details of the Pergamon takeover have still not been released, except that Pergamon is now the sole owner. The Department of Industry declined to comment on the fate of the £600,000 of public money invested in the project by the DoI and the British Library.

IBM cuts 303X prices in UK

IBM has slashed 11% off 303X processor purchase and lease prices in the UK — but the parent company in the US has raised prices there right across the board.

The 11% cut in the UK covers all entry level 303X processor models and all models of the 3033. In the US most maintenance, software and services prices rise 10% in October, and purchase and rental prices for most DP Division products rise 5% immediately, while General Systems Division prices rise 7%. The company gave no explanation for the UK cuts but blamed inflation for the rises in the US.

1,000 auto tellers

NATIONAL Westminster's US bank, New York-based National Bank of North America, is installing over 1,000 IBM counter and automatic teller terminals in [illegible] branches.

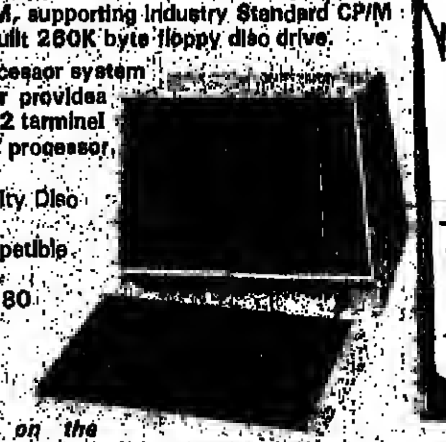
INSIDE THIS WEEK'S CW....

Computerview	2	Micro News	12
Letters	2	Fujitsu's OEM progress	14
Snag for BASF	3	Indian Scene	15
Downtime	4	Viewdata standards decision	17
Focus on testing DPMs	4	After the Itel collapse	18
Gibb's Mythodology	4	Advanced file design	19
Maintaining your system	6	Installing Poll kit	20
Software File	7	Company News	21
On Spot	8	Product News	24/25
People and Events	10	Sales Bit	45
OFT verdict on ICL	11	Amdahl merger latest	48

Prize Crossword . . . Page 46

DP-9500 EX STOCK!
The waiting is over — contact your nearest supplier for the eagerly awaited 132-column matrix printer with high-resolution graphics, descenders and full communication capability, all for £895.00 unit quantity.
Anadex Ltd.
Dorna House, Guildford Road, West End, Woking, Surrey
Telephone (09905) 6333. Telex 858762 Anadex G.

New from Cifer... ...the 2684 User Programmable Terminal
Introducing the Cifer 2684 User programmable terminal at the top end of the 2600 range of compatible VDU's. The 2684 provides a full 64K bytes of user RAM, supporting Industry Standard CP/M operating system with in built 260K byte floppy disc drive.
In addition to the disc processor system a separate VDU processor provides all the features of the 2632 terminal which acts as a 'front end' processor.
• Dual Z80 processor.
• Single and Double Density Disc Drives.
• Full range of CP/M compatible software.
• Industry standard 24 x 80 Display.
• Top quality 100 key detached keyboard.
• Compact Housing.



For further information on the complete 2600 range contact Cifer today.
CIFER SYSTEMS LIMITED
Factory and South Western Sales
Avro Way, Bowerhill, Melksham, Wilts
Tel: Melksham (0225) 704502 Telex: 449872
Northern Area Sales
Newtown House, Maid Marion Way, Nottingham.
Tel: Nottingham (0602) 410651
South Eastern Sales
Tel: (08832) 2778

COMPUTER WEEKLY

Vol. 29 No. 713
Thursday, July 3, 1980

Acting Editor
Tony Higgins 01-261 8696

Advertisement Manager
Harry Hutson 01-261 8359
01-261 8503

Class Ad Manager
Brian Durrant 01-261 8597

Publishing Director
Dr J. A. O. Thorne

Editorial Director
Chris Hipwell

IPC Electrical Electronic Press Ltd,
Dorset House, Stamford Street,
London, SE1 9LU
Telephone 01-261 8000.
Telegrams/Telex: 25137 BISPRS G

Branch Offices
Birmingham 202 Lynton House
Walsall Road, Birmingham 22B
Telephone 021-356 4838

Manchester, Grove House
Skerton Road, Old Trafford,
Manchester, M16 0WJ
Tel 061-872 8861

New York, 205 East 42nd Street
New York NY 10017
Tel (212) 867 2080 Telex 421710

Published weekly on Thursday

Registered at the Post Office as a
newspaper. Price per copy 20p

© IPC Business Press Ltd 1980

CIRCULATION INQUIRIES
Requested readership:
01-837 3636
Subscriptions: 0444 59188

EDITORIAL
Keith Jones 261 8344
Tim Palmer 261 8031
Claire Gooding 261 8303
Rory Johnston 261 8028
Eileen Steiner 261 8806
Bernard Allen 261 8035
Donald Kennett 261 8719
Mike Marples 261 8042
Don Mitchell 261 8042
Chris Youett 261 8643
Nancy Pocock 261 8643

ADVERTISING — Display
Chris O'Hea 261 8888
Lloyd Collins 261 8743
Steve Ross 261 8203
Ian Carter 261 8109
Manchester
Harry Aiken 061-872 4211
Birmingham
Ken Parrott 021-356 4838

ADVERTISING — Classified
Chris Prior 261 8028
Ken Walford 261 8097
Ian Faux 261 8019
Neil McConnell 261 8004
Vic Sheret 261 8008
Derick Smith 261 8464
Julie Hannaford 261 8002
Kevin McGowan 261 8088
Manchester
Owen Kelly 061-872 4211
Birmingham
Sian Harris 021-356 4838

Production
Ray Kelly 261 8016
Steve Robinson 261 8878
Peter Regis 261 8818

Computer Weekly has a circulation each week of over 90,000 including the highest (UK) requested circulation in the UK

ISSN 0010-4787

COMPUTERVIEW

Business as usual

IN its own way the agreement just made by ICL with the Office of Fair Trading to change some of its commercial practices may appear to resemble somewhat the consent decree imposed many years ago on IBM by the US government that regulates the ways in which the industry giant deals with its customers.

But the OFT has imposed no major changes on ICL's policies and allows the company to continue with practices that are nowhere near as restrictive as those which IBM is obliged to follow. The OFT agreement, in fact, strengthens rather than weakens ICL's position in relation to its customers and the suppliers of used ICL machines and plug compatible hardware because it gives ICL what appears to be official OFT approval for its policies as they now stand.

These policies still include ICL reserving the right to refuse to maintain a machine after as little as five years and to demand a compensatory levy or licence fee from a user who installs non-ICL memory or peripherals. The only significant concession squeezed out of ICL is an agreement to abolish the 20% maintenance surcharge on old ICL machines if ICL agrees to service them. Hardly worthy of mention is the reduction from 20% to 16% in the maximum levy on foreign equipment attachments.

But on the question of ICL's maintenance policies the OFT has admitted that it did not lightly reach its decision not to proceed with its investigations and on the matter of the levy the OFT has told ICL that the agreement just made should not be taken as an irrevocable acceptance of the principle of the licence fee. The company is warned that the agreement should not be regarded as precluding the possible use of the OFT's powers under the new Competition Act which is intended to strengthen its regulatory muscle.

So the OFT's main shortcoming in dealing with this case appears to have been a lack of understanding of the computer industry and computer technology rather than a lack of concern about the possible undesirability of ICL's policies. In other words the OFT's fault lay in inexperience rather than indifference.

But, the real reason for the failure to bring about major change in ICL's commercial practices is a lack of enthusiasm for the cause on the part of users. Some computer companies whose business has been adversely affected by the policies have done their utmost to persuade the OFT to really get tough with ICL, but users in general have made very little fuss. Some timid attempts in the past by the ICL Computer Users Association to pressure ICL into changing its policies were strongly rebuffed by the company and about two years ago ICL told the CUA that it had no intention whatsoever of changing any of its policies. Hardly another word was uttered publicly on the subject until late last year when the OFT started to threaten ICL with the Competition Act (CW, December 13, 1979). ICL obviously decided that its approach with the OFT should be diplomatic rather than heavy handed and its approach appears to have paid off.

It seems fairly clear that the two users who publicly challenged ICL over its attachment policies, the Norwich Union Insurance Group and Bradford Council, showed an unusual independence of mind, and they confirmed this by subsequently changing their mainframes.

LETTERS to the EDITOR

Where do 'better' recruits come from?

I don't suppose I was the only person to be disappointed that the feature headed "Which People Make Best Recruits?" (Page Six, June 12), perpetuated the apparent ignorance about there being no degree courses in subjects related "to the requirements of the industry."

My own institution, The City University, is one of several universities and polytechnics which now offer DP specialist degrees (BSc in Data Processing Systems in our case) in addition to the longer established computer science degrees.

Higher education is now reasonably well staffed with individuals who have very respectable industrial backgrounds in terms of DP systems analysis experience.

The discussion around the question posed in your headline should have shown us the courtesy of asking whether graduates from the kind of degrees I've referred to will make "better" recruits to the DP industry. Even if you remained sceptical at least we'd have something specific to react to.

Sadly, I have to report that at present the national publicity about the need for trained people in the computing field seems to have stimulated dramatically the applications for admissions to computer science courses, while leaving the DP/systems analysis area rather neglected by the bright and ambitious sixth formers.

May I slip in a plea while I'm about it! Being very aware of the importance of practical experience in a vocational degree, many institutions insist on the industrial sandwich year (or something equivalent) being part of the degree course for students straight from school. Placing these students is not as easy as one might expect.

"We can't afford to take them at present." "We don't take trainees". These answers are all too frequently the ones given by our forward-looking industry. Can I appeal to employers to look favourably on requests to find a place for such students as they represent the potential leaders of the future?

ALWYN JONES
Senior Tutor
City University Business School,
London.

Responsibility to the customer

I WAS pleased to read Philip Howell's defence of the hardware and software at the now infamous Driver and Vehicle Licensing Centre at Swansea and the CHAPS banking system project (Letters, March 27). It is not my intention to knock either project; in the former's case many have already done so and in the latter's many no doubt will. I would, however, like to make the following observation based on experience of the DVLC project.

This project was born in an age when giant computers were considered to be the panacea for cost-effective data processing. Centralisation of processing had to be achieved because prohibitive hardware costs rendered alternatives unacceptable. The project was designed around the very latest hardware and software available at the time and, allowing for teething troubles associated with any new range of equipment, both have combined to give an acceptable level of service.

However, I do not think ICL's responsibility to its customer ends there. By any standards, this was/is a major ICL account (in fact a prestige account) and ICL's investment in supporting the account was in proportion to the customer's investment in ICL products.

The customer should have been the recipient of the finest professional advice and counsel that ICL could muster at all stages of project development and especially at meetings where major policy decisions were taken.

That they were not, or if they were that such advice was allowed to go unheeded, is something for which ICL cannot be blameless.

CLIVE DIXON
Erdington, Birmingham

Plea for career opportunities for graduate mothers

EVERY week, among the letters I receive asking for careers advice are several from people in their late thirties and forties who want to enter computing. Some have applied for a TOPS programming course but have been told that above 35 years old they cannot be considered. Some of them have a business background and I advise them to try for systems analysis; others have teaching experience and these I advise to aim for instructing.

However, this still leaves a significant number, particularly of graduate mothers, who might well be capable of becoming the "mother" of a programming department, with 20 years of ... and loyal service to give.

We could ascertain ... suitability by including them in our regular Threshold ... activities, but to little avail ... minds of all employers ... closed as the TOPS policy ... to suggest. I shall be glad ... from any of your readers who ... plagued by job-hoppers but ... an open mind and are prepared ... invest in a potential long-... employee.

GEORGE ...
Careers Projects Manager
National Computing Centre,
Oxford Road,
Manchester M1 7ED

1984 and all that...

THIS week's example of the strange things people say in the media about computers was sent in by Frank O'Shea of Rathfarnham, County Dublin, who wins £5.

"So what is a micro chip? It is a computer but scaled down so minute that it can be slotted through the eye of a needle. Its trade name, Silicon chip, comes from the scientists in Silicon, California, who, in the Sixties, discovered that "integrated circuits" bringing together as many as 100,000 transistors and capacitors, could be built on a single silicon, or micro, chip.

The leap forward was incredible. In a document on microelectronics produced by the ASTI here [Call ...] ... has been established since the introduction of the Volkswagen motor car . . ."

Irish Independent

GOVERNMENT COMPUTER REQUIREMENTS

NATIONAL LIBRARY OF SCOTLAND
SCOTTISH LIBRARIES COOPERATIVE AUTOMATION PROJECT

Wilkes Computing
we have digital
Terminals Available

LA120 DECWRITER III
● 180 cps bidirectional KSR
● 8 Font sizes
● 1K char. buffer
● EIA Interface
● Selectable Form length

Wilkes Computing
Tel (0272) 25921 Telex 449205

Snag for BASF's compatible bid

THE plans of West German chemicals giant BASF to enter the IBM-compatible processor market with a full range of top end processors have hit a snag, and so far the company only has agreement for the Hitachi M-170 (CW, April 26).

The company also wants the M-180 and the M-200H to make up a three level line called Series 7; These machines are already marketed by Olivetti Computers and by Nasco, successor to Itel.

Key advantages BASF claims to offer are prices even keener than the 15 to 20% discount it offers on their IBM peripherals, coupled with "very flexible" leases, all written by BASF itself. Most of its large scale IBM-compatible disc drives come from the joint Fujitsu-Hitachi company Nippon Peripherals, while its tape drives come from Storage Technology.

The M-170 appears as the BASF 7/80 and is rated equal to an IBM 3031. Significant differences are up to 8 megabytes of main memory and eight channels against six of each for the 3031, a 50% lower power requirement, and 30% less weight.

BASF plans to offer the M-180 in three upgradable models, the 7/70N, the 7/70 and the 7/70AP. The 7/70N offers about 83% more power than the 3031, offers 1 to 8 megabytes of main memory and a 16K-byte cache.

Increasing the cache size to 64K-bytes and doubling the maximum number of channels and number of megabytes to 16 turns the N model into a 7/70. The AP version adds a second CPU, but no more memory or channels.

The 7/70 model is rated at between 5 and 15% more powerful than the 3032 and the AP model 75% more powerful. However comparisons with the 3032 are not particularly useful, since that machine has effectively been superseded by the 3033N in IBM's catalogue.

At the top, the 7/80 is claimed to offer between 60 and 80% more power than the 3033; configurations are almost identical, but the CPU cycles at 42 nanosecond compared with 57 nanoseconds for the 3033.

The 7/80MP is claimed to be twice as powerful as a dual processor 3033MP system, and is simply two 7/80s tightly coupled running under a single copy of the MVS/SE operating system.

A key plus that BASF is planning to offer with the 7/80 models is the Hitachi integrated array processor, which adds 28 instructions to give high speed execution of vector and matrix arithmetic programs written in Fortran.

The only operating systems BASF is proposing to support are MVS/SE and VM/370.

All the Hitachi machines are air-cooled, whereas the IBM 3032 and 3033 require water cooling. BASF supplies the systems complete with motor-generator.

500 new jobs

MOTOROLA plans to increase its MOS capacity and this could mean a major investment in the UK.

Sites in the UK are being considered for the plant and East Kilbride in Scotland, where Motorola already produces the 16K micro chip, is a strong contender.

The new plant will provide over 500 new jobs.

Oakley

Codasyl representative

BARRY OAKLEY, software development manager at Micro Focus, will represent his firm on the Codasyl Cobol Committee, responsible for controlling the future development of Cobol.

The UK software house recently became a member and is one of only two European companies represented on it, the other being ICL.

The committee is composed of Cobol users and implementors and operates by means of amendments to the Cobol Journal of Development, which is used by the American National Standards Institute (Ansi) in preparing new language standards.

Hawker takes off for systems market

WITH several years of applications software design experience to draw on, Hawker Siddeley Dynamics Engineering, part of the £1,100 million Hawker Siddeley group, has set up a dynamic software service division, to win a bigger share of the rich systems market.

Starting with a £1 million investment in personnel, hardware and accommodation, a complete applications design and development service is being offered.

The aim will be to join forces with hardware manufacturers to make joint bids for contracts. Partners in these ventures could include Data General, Modcomp, Digico, Ferranti and Computer Automation.

Manager of DSS is John Bancroft, who expects his present professional staff of about 35 to be doubled by the end of the year, said "We want to put DSS into the top 10% of the software and systems league in the next 12 months."

HSDE is already a prime supplier of control and monitoring systems for a wide range of applications in the aviation, marine and mining industries and DSS sales manager Terry Ballard expects to extend equipment and systems sales well beyond the major customers already served. These include the Defence Ministry, the National Coal Board and the CEGB.

Most of the present Hawker Siddeley systems are based on Intel devices or Ferranti's F100, with Coral 66 and Moscot as the most frequently used languages. The use of Ada is now being studied. Development work at the DSS base at Hatfield, Herts, will be run on a Digital Equipment PDP 11/70.

Beats predictions

WITH more than 100 systems installed worldwide and over 150 for delivery in the near future, Sperry Univac's V77-800 mini has outstripped the sales predictions made when it was launched last year. Applications are equally divided between commercial and scientific users and in the UK customers include Surrey County Council, Bass Charrington, Clydesdale Bank and the Metropolitan Police.

Free mini helps Poly to run technology course

PUBLIC spending cuts have been slightly ameliorated for the Polytechnic of Central London where Hewlett-Packard has presented an HP 1000 minicomputer system worth £45,000. The machine will be used primarily by students sponsored by H-P on a two-year course called the Technical Education Council Higher Diploma in Computer Technology.

The course, introduced last year, is aimed at providing would-be field service engineers with a broad knowledge of computer technology, including Basic programming, systems software and communications as well as maintenance methods.

Apart from H-P, students are also sponsored by Data General and Digital Equipment and the course already has a DEC PDP-11/34 described as being on "permanent loan." H-P, DG and DEC each sponsors seven students at the moment. To get on the course they need at least one science A level and they must spend the summer vacation working for the sponsor.

Accepting the HP 1000 at the handover ceremony last week Professor Colin Adamson, the Rector of PCL, pointed out that PCL's close links with industry meant that it was not being affected as seriously by the cuts in public spending as others.

Prof Adamson referred to the microprocessor training centre at PCL run in association with Integrated Computer Systems, a firm that specialises in microprocessor training courses (CW, July 26, 1979).

X-Data celebrates with 15% price cuts

PERIPHERAL equipment wholesaler X-Data, of Slough, Berks, has marked the end of its second year of trading by cutting the prices of matrix printers by 15%. The company is now offering the DP250 at £1,770 each on orders of 50 units, a cut of £310 per printer. On the same terms the DP125 comes down to £1,360, a cut of £240.

Managing director Peter Haworth said that during X-Data's second year over £1 million worth of equipment was delivered. The forecast for 1980/81 was set at £2.6 million and, with first quarter bookings at well over £1 million, he was confident that this would be achieved.

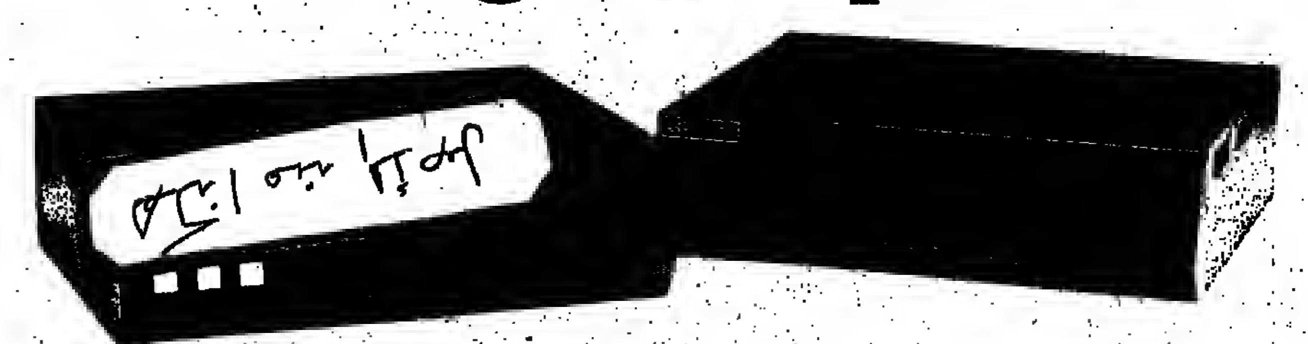
Overheads had been kept to the minimum said Haworth by dealing only in proven, innovative equipment that was in production.

Continuing this policy, it was planned to introduce a new line of video terminals later this year as well as two new models of the highly successful small scale Microline-80 matrix printer.

GOVERNMENT COMPUTER REQUIREMENTS

MINISTRY OF DEFENCE

The microcomputer with storage to spare



RAIR Black Box

If you're a microcomputer user, or have investigated the use of micros, chances are you have come across a major stumbling block for many serious microcomputer applications — too little data storage capacity. It is to solve just this problem that we have introduced our Black Box Hard Disk System.

Our Hard Disk packages a state-of-the-art 10 megabyte 8 inch Winchester drive, together with custom-designed switched-mode power supply, and micro programmed controller, into a compact and attractive desk-top unit no larger than our Black Box Microcomputer itself. Up to 8 of our Hard Disk Drives may be daisy-chained from a single microcomputer, providing 80 megabytes of storage for the largest database applications.

And our Hard Disk gives more than just storage space — the Winchester technology recording technique gives a transfer rate of 648K bytes/sec and access times averaging 50ms for major performance improvements.

To: RAIR Limited
30-32 Neal Street, London WC2H 9PS
Telephone 01-836 4663
☐ Please send literature
☐ Please telephone
Name
Position
Company
Address
Tel Ext

RAIR

Most important our Hard Disk System is fully supported by all our standard software, including our enhanced disk operating system, BASIC, FORTRAN, COBOL, PASCAL languages, etc. Existing applications run without modification, and new applications can take advantage of our enhanced high-performance database software. And our unique BACKUP package makes security backup quick, simple and totally reliable.

What's more we're not just making promises. Our Hard Disk System is available now, either to enhance existing systems, or together with our Black Box, as a complete hard disk microcomputer.

What does it all cost? At £2500 our Hard Disk gives you mainframe performance at micro prices.

Downtime

by Chad

Now CAD comes to the crunch

WHAT with the shortage of staff in the Health Service these days there is of course tremendous opportunity for computers to help out. The latest development, I am pleased to report, is in dentistry, where the supply of Australians coming over here to practise has dried up pending the introduction of cheap Freddie Laker flights from Down Under.

Never fear, this latest wonder of space-age technology enables any garage mechanic from Bolton to sort out your choppers without having to go through years of expensive training. The CAD (Computer-Aided Dontistry) System prompts him at every step along the way.

Of course it helps if you are well-cycd so you can keep one eye on the screen while the other is peering down the patient's gob. The next step is to have a Puma robot to wield the drill and forceps.

You just can't trust statistics

DO you get as jaded as I do about this never-ending stream of portentous, expansively produced reports about how British Industry is doomed, and how many millions of programmers we are short, and how many Northumbrian spoke-shavers are going to be put out of work by micro chips? I sometimes think it all the effort put into the reports were devoted to solving the problems, these latter would disappear in no time.

Anyway, a feature of reports is that they are self-replicating. Only a few reports have to come out before you can start writing reports about the reports, until everything has been repeated so many times it can not be disputed, Alan Daniels of Brunel University was talking about this the other day. He was with the NCC in its early days, when they were trying to put together the systems analysts' course. They had been told that they must train 12,000 people in three years, an impossible task for one organisation.

It occurred to Daniels to ask where this figure of 12,000 had come from. After much investigation it turned out that one day someone in the Department of Education and Science had rung up someone in the Department of Industry and asked, "How many systems analysts does the country need?"

"Oooh, 12,000?" came the reply. For years afterwards this figure was quoted in report after report, in studies, manpower plans and projections. The originator would cringe with embarrassment every time he saw it. Who knows what the state of our industry would be now if he had coughed at the time and said something different? The unkind would say, exactly the same.

GILB'S MYTHODOLOGY

How Infotecture helps save on people-power

Tom Gilb is an independent consultant, lecturer and author on computing topics.

AT the end of my last column, I made what I hope was a provocative remark. I asserted that our present professional staffing and supply problems are not really the result of too much work for too few people. I asserted that at least part of the problem was that we lacked a professional class of system architects, which I'd like to call Infotects, trained and motivated to solve the manpower problem before it becomes one.

I mean that somebody at the beginning of the project should identify the fact that there is a clear limit on the available people-power, and make that fact central to the total architecture of the system. There is a choice. There are approaches to solving the real user problem in a practical, timely and economic manner, though not necessarily in an idealistic and "Not Invented Here" manner, which requires substantially less people-power than the conventional programmed solution.

What I am asserting is that you can design infosystems so that human development time is reduced substantially. You might have to sacrifice some qualities, resources, costs and functions to do so — but after all, that is what architecture is all about. Compromise: You can't have it all at once. And if you insist on having everything, you must pay the price.

I think I would like to move away from broad generalizations, and go to the source of them: experience. Let me give an example from my own practice.

In a far-away land and a far-away time there was a 100-person programming department which had worked ten years to get its 300,000 lines of Fortran code correct for a national taxation system. The new online, database computer was going to be delivered in six months, and one had promised the Minister an online demo in seven months' time.

The Chief of all programmers announced to me informally in the pub one evening that the plan was to rewrite everything to Cobol.

At first I was sure I had misunderstood. Later I let myself be convinced that he was serious, even if that meant all one hundred people, twenty hours a day, seven days a week for the next two years, until the project was brought in late.

I asked for and got a shot at an alternative Infotecture. Not least, I got support from the big boss. The one who was responsible, if things went wrong, to the Minister. The rest of the gang soon became my enemies, for reasons which I was later to learn.

The first step was to ease conversion by translating Fortran to Fortran. At my request we asked and discovered that the supplier was just about to release a Fortran conversion aid. My client had never asked!

The administrative subroutines for character-oriented data were not included in the package, and with a move from a four to ten-character-per-word machine, they were important. In order to convince my client that his was a straightforward conversion I had to personally flowchart the logic for the most complex routine.

The technical trick was an old one of Fortran portability: only four characters per word were utilised in the record buffers of the new system. My client was convinced before this magic trick was revealed, that it was easier to manually rewrite about 150,000 lines of code.

The next step was to declare the master files on the old and new system to be physically and logically the same. This eliminated the complex files they had planned — a quicksand trap they were already deep in, and kept the main updating in a safe batch mode.

Then the online database was created by loading a master file, or abbreviated extract of it, straight onto disc files. No indexes or sorting, just a straight sequential load. Record retrieval was via a binary search, which with rough estimates implied a maximum one-second search time for the estimated eighty rush inquiries per day. Once all the high-volume updating was put back to batch, and all data collection was already on separate minicomputers in the old batch system (interactive input, batch output to the big update), then there was no more than a few online inquiries which required immediate response. An index would cost more than it saved.

This Infotecture created heated debate. I was told to... argued for the next three months about whether such a simple solution was possible. They finally accepted it and completed the project on time. I estimate they saved hundreds of man-years. Just before I left I found out the real reason why they wanted desperately to do the whole thing in Cobol. Nobody else in the country was using Fortran for administrative work, and they couldn't job-hop without the experience!

I have many more such experiences from varied contexts and application areas. My conclusion is that an awful lot of people-power is being wasted through lack of resource-aware architecture — sorry, Infotecture. Just as we are beginning to recognise that better architectural decisions can save a lot of human effort and energy of a non-human variety: we might also wake up to a powerful "assistant" solution to our people-resource problems. Or do we really have to get into a far more desperate situation than we are in today before we start moving Infotects into our organisational structure?

FOCUS

A down-to-earth DPM test

BEING a computer industry examination compiler must be a frustrating job. No sooner has the latest technology been laboriously assessed and hesitantly introduced into the syllabus than it has to be discarded in favour of the next technical revolution.

The examination world is very much an academic exercise, masterminded by individuals more than somewhat removed from real-life computing. Hence the general emphasis on number-crunching and CAD applications at the expense of such areas as datacoms, minicomputers and management information systems.

Show an examiner a print-out and unless it features algebraic and analogue computation, he fails it. Similarly, present a Cobol program and it will be returned "re-compile in Fortran".

The individual's track-record counts for more than his ability to answer irrelevant questions on such topics as: The calculation of function values, and the plotting of graphs of exponential, logarithmic and algebraic functions; Use of and response to imagination and humour in explanation and persuasion (IDPM 1980 syllabus).

A typical example of being out of touch involves viewdata. Prestel. Few academics being directly involved, the exam compilers choose to ignore the topic, yet Prestel could well unleash a whole array of new technologies and management information possibilities. Seldom do the exam papers dwell on such matters as servicing contracts and recruitment, both of vital concern to DP management and installations.

What is clearly required is a specialist computer exam, one which covers such topics as where best to dry out operators' wet boots and how to differentiate between the company MD and a visiting IBM salesman.

The Focus-style exam would invite candidates to muse on such questions as: 1. Why does the DPM invariably visit the program office during a spirited discussion on the merits of legalising pot? 2. Account for the site engineer being on a course during the peak load periods. 3. The one day when a major PM session is under way, the company chairman arrives to show off the installation to a colleague. Evaluate the effect of cigar smoke and brandy fumes on a) the disc storage subsystem and b) smoke detectors.

Maybe it is time an exam was introduced to evaluate exams. The BCSL, which has long been fighting a losing battle with City and Guilds and the newly emerging BEC/TEC National Awards, is now having to contend with a restructured DPM exam.

Without doubt, however, the IDPM exam should be entered for all levels of consultants and auditors. One typical question calls for the demonstration of understanding of the operation of a computer and its peripheral equipment under normal commercial operating conditions. At least the DP team would have to explain to this hypothetical auditing team that it is just not possible to mark off a tape directly on the VDU, with a pencil without a green biro.

TEN YEARS AGO...

From Computer Weekly of July 2, 1970

IBM launched the 370 range with the 155 and 165 models first off the production line in February and April of 1971 ... The new town of Milton Keynes broke with tradition of councils ordering ICL kit and bought a £248,000 Burroughs B3500-based system ... The National Computing Centre revised its structure and set up three groups to cover development services, services and management ser-vices ... One tenth of the value of an order from the Argentine Navy for guided missile destroyers went to Ferranti, who would be supplying weapon control systems worth £3 million ... A first, was claimed for a computer-backed keyboard conversational printing terminal made by Siemens Organisation (Insertion) ... Details of the Honeywell-Bull merger suggested that Honeywell would take the lion's share

Choosing a computer is a question of philosophy

When it comes to the crunch it's all a question of need versus cost. Of course the easiest way is to buy a suit that's too big and then grow into it. Unfortunately it's also the most expensive way. And you always run the risk that it won't fit you properly, now or later.

This is where our philosophy comes in. A NORD computer system sets no fixed limits. It rearranged or added to when your needs change, regardless of your initial configuration or your application.

What today is a simple system for order processing or stock accounting can be extended tomorrow to become a complex system for distributed data processing or production control. You need never take a step backwards. The equipment and programs you build up, you keep. You just add to them.

Norsk Data

NORSK DATA Ltd
Nord House
17 Bells Street
London NW1 6BB
Tel: 01-276-5501

If you think our philosophy matches yours, call us - we'll be pleased to talk to you

The world's most advanced business system. More or less.

More powerful. Each Q1 Microlite 'terminal' is a self-contained microcomputer with up to 64k memory, either 2 x 400k or 2 x 1 megabyte integral 5¼" floppy disk drives, communications facilities & industry compatible interfaces.

More expandable. Expansion of the system is easy with the Q1 "add on concept". Up to 64 terminals can be linked together by using multiplexors, providing the user with a true distributed processing network. No expensive modifications to hardware or software are necessary.

More versatile. Multifunction capability – the computer can be used for data processing, data entry, word processing and scientific calculation.

More languages. Use of two high level languages, Cobol and PL/I, is almost unique and gives the user great flexibility. Applications programs in both languages, including the highly sophisticated Q1 Financial Accounting System, are now available.

More storage. 5, 10, 20, 40, 48 megabyte Winchester Disk drives are available to meet practically any storage requirements.

Less space. No special environment required. The equipment is so compact it can sit on the users desk. The cabinet contains the entire system including processor, advanced plasma display, storage, printer and communications facility. It measures only 60cm square x 22.5cm high (24"x 29"x 9").

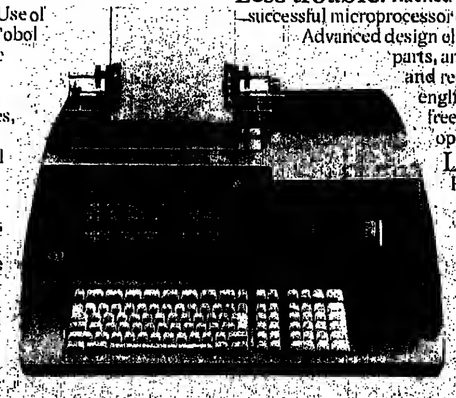
Less strain. Advanced plasma display, without the normal flicker associated with conventional CRT's. Allows the operator to work for long periods without eyestrain.

Less degradation. Distributed system, yet negligible degradation, because each 'terminal' is an intelligent microcomputer.

Less trouble. Backed by nearly a decade of successful microprocessor experience.

Advanced design eliminates many moving parts, and makes servicing and repairs by Q1's field engineering force a trouble-free and economic operation.

Less cost. Progressively upgradeable from a single standalone system to a distributed network to rival most mainframe computers, without expensive extra storage requirements or expensive software upgrades.



Q1 MICROLITE
Making business more efficient

For more information write to: David Thedinnick, Q1 Europe Limited, 52/53 Jermyn Street, London SW1Y 6LX. Or phone 01-493 1943

PAGE SIX for programmers and analysts

'The million monkey method won't work'

THE management and deployment of programming staff through the life of a development project appears to be a serious unresolved problem, according to speakers and exhibitors at the NCC.

Randy Jensen of Hughes Aircraft Corp stated the problem succinctly. "The million monkey approach won't work. You can't get a project completed in zero time by putting infinite resources on it. Projects tend to get staffed up as a step function. In order to ensure that there will be enough people on the project later on, the tendency is to put too many people on it initially, so that there are more people there than can work effectively.

"As a result the schedule slips, and so more effort is brought in to try to speed it up, but that approach does not work. The net effect is to make the project later still.

"What we are after is efficiency, and that means the minimum number of dollars for the maximum profit. It has been demonstrated that by initially planning the project with fewer people and accepting a longer development time, the project will be completed more cheaply. If, however, staff are misapplied, productivity and reliability both go down."

Surprisingly perhaps, given the fact that everyone seems to believe that the Japanese do these things much better than we do, a Fujitsu representative declared in private conversation that Japanese companies tend to put too much effort into their projects — and suffer for it. "There is no shortage of programmers in Japan," he declared, "but we are at least two years behind the US in software development."

Even a perfect system needs some maintenance

"A PROGRAMMER with 10 years' experience will have spent half that time on maintenance — and half the cost of software lies in its maintenance." Strong words, and not the kind programmers will welcome, but this was nevertheless the view put forward by Judy Clapp of Mitre Corp, speaking at the National Computing Conference at Anaheim, California.

She was addressing a session on the economics of software and challenging the accepted notion that the need for software maintenance is necessarily bad.

"An obvious example of a system where maintenance is beneficial and essential is one which is critical to people's lives, such as an air traffic control application," she said.

This week Page Six moves across to California and reports on some of the programming and related topics that were discussed at the 1980 National Computing Conference in Anaheim.

"But maintenance is necessary even in a perfectly conceived and designed system. The whole point of putting it into software was to be able to change it if necessary — and it has been shown that one third of hardware problems are solved by changing the software. It's the cheapest way.

"For example, a modification was needed in the F-111 fighter-bomber fleet. On some aircraft the application had been implemented in hardware and on others in software. To do the same modification cost $8 million and took 78 months in the hardware version, while the software change cost $20,000, and took only a few months to complete.

"Users' needs change and develop, and even a perfect system needs to change with them; it's healthy for systems to require maintenance and the time to plan for it is early in the development phase. During this phase the software engineer is in control; once it is in maintenance, the user has control."

Earlier in the discussion, Fred Tatar of Ford Aerospace had painted a grim picture of the soaring costs of software development, suggesting that setting up a major project cost $15,000 per software person in startup costs and $20,000 per person in software costs per year. The latter figure is driven up by the cost of replacing people who leave.

"I'm sure that we are not the only people experiencing this, but company loyalties in Palo Alto seem to have an amazingly short life," he commented. "If you have 100 engineers ... leave in any one year, and ... $10,000 each to replace."

Tatar's solution to the problem was the installation of development machines. "We're using Digital Equipment PDP-11/70s with the Unix operating system. We have 15 of them ... design support tools and compilers and assemblers.

"By going with the 11/70s and Unix we had something to analyse the operation. At present we have one terminal per two engineers, but we would like to have one to one.

"If you have really good development facilities, our experience over one year is that you get a much better ... with job candidates. We're reducing our people to people communication and putting more electronic mail, and we're developing standard ways of doing this. That way we're slowly becoming less dependent on specific individuals."

Female attitudes that bar the advancement of fellow women

WOMEN should "forget past prejudices and face real time problems in the world," was the message from Ida Mason of LeHigh University when she addressed a session on women in computing at the NCC.

These "real problems" included women's promotion where they involved relocation. Would a husband be prepared to move with his wife if he earned more than she did, if the move meant a drop in the joint salary?

Another of the "real problems" sounds downright trivial, but is one which American women obviously take seriously. Responsible positions involve travel, but it is more dangerous for a woman to travel late in a large city, while travel with male colleagues often led to objections from the men's wives.

The consensus seemed to be that other women, and female attitudes in general, were the biggest bars to the advancement of women. "Where a man believes that he achieved his position on merit, a woman believes she got hers by luck," commented Ida Mason.

This sort of problem was rampant, it seemed. "A woman faced with job candidates will tend to choose the man rather than the woman, in the same way as users tend to choose IBM, because it's safe," continued Ida Mason. "There is also the Queen Bee syndrome: I worked long and hard to get here; why should she have it any easier?"

Nevertheless, things are much better for women in the DP industry than in the employment market as a whole. "Throughout the US economy, women's salaries are only 60% of men's, but in DP the figure is 86%," claimed Ida Mason.

In spite of this assertion, the "real problems" of women seeking advancement in industry seem to be acute, which was obvious from the feminist protests coming from the floor throughout the discussion.

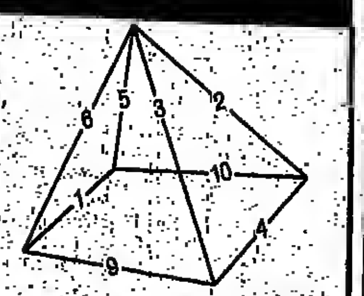
What came strongly over was that the US employment climate is very different from that in the UK and that, for example, imaginative solutions to the problems involved in the employment of women — such as F International's home programming network — are not practised in the US.

Page Six will be pleased to hear the views of women in the UK who agree or disagree with the worries of their counterparts in the US.

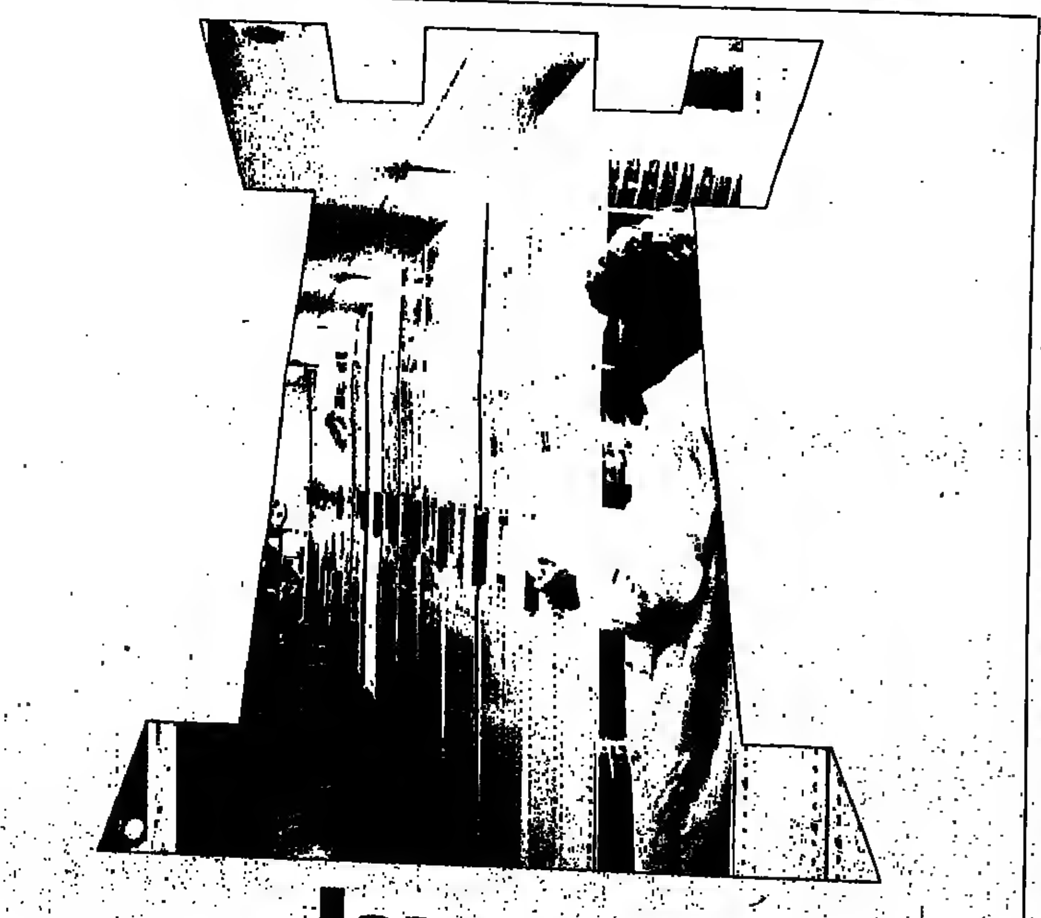
Puzzler

THIS diagram, which formed the subject of the November 24, 1977 Puzzler, illustrates the only way (not counting rotations and reflections) in which the eight edges of a square-base pyramid may be numbered — using eight different positive integers — to give a constant of 16 at each vertex.

An interesting analogous problem is to search for eight *consecutive* positive integers which can be used to construct a similar Magic Pyramid. Only one set exists. Can you set up the appropriate pyramid, with the numbers correctly placed, before turning to page 45 for the solution?



turning to page 45 for the solution



Is your back-up data secure?

Are you concerned about the safety and security of your vital computer data and business documentation?

Is it safe? ... do you know who has access to your files?

Is it safe? If it were stolen or destroyed, have you ever considered the cost of the reconstruction ... and even lost business.

Is it safe? Yes — it is with Hays Business Services. Our permanently controlled environment storage facility has sophisticated fire prevention systems and computerised security to make sure it is really safe.

Hays Business Services offer the latest storage available and fast national delivery and retrieval of all computer media and documentation (guaranteed 2 hours in London postal area).

The secure way to avoid these risks is to phone or write to

Hays Business Services Ltd

Vine Lane, London SE1 2JW. Tel. 01-403 2033

Access Data distributors for

QUME

FACIT

SYSTEMS

We offer:

*Installation & commissioning by our own engineers

*Service & maintenance by our own engineers

*On site warranty.

*Rapid call-out ...

*O. E. M. suppliers.

Access Data Communications Ltd

228 High Street, Uxbridge, Middx

DIGITAL • ANDERSON JACOBSON • TRANSDATA • A M JACQUARD • MELLORDATA • NEWBURY LABORATORIES • TEXAS • DATA DYNAMICS • TECHTRAN • PERICOM • TALLY • LEAR SIEGLER • DIABLO • QUME • TREND • HEWLETT PACKARD

KSR's 30 cps from £46 per month. 120 cps from £89 per month. Portable from £63 per month. Daisy Wheel from £104 per month

Monitors and VDU's Standard (Teletype compatible) from £33 per month. API from £47 per month. VT52 and other options from £47 per month

ASR's Integral terminals from £87 per month. Separate P/T Cassette units from £43 per month. Separate Diskette units from £60 per month

SHORT TERM RENTALS ALSO AVAILABLE

Contact Mike Brooke or Philip Ely. Tel: Byfleet 53151 & 49618

MBS Rentals

Specialists in the renting of terminals

MBS Rentals, Aldwych House, Madeira Road, West Byfleet, Surrey KT14 6BA

SOFTWARE FILE

by Claire Gooding

ICL and SPL in talks

ALTHOUGH ICL has expressed an interest in investing in the systems house SPL, MD Peter Adams has confirmed that the preliminary discussions had no positive outcome. "We have approaches from people all the time but this one got nowhere," he said.

Meanwhile SPL's venture into robotics, British Robotic Systems has won its first contract (CW, March 6). "If we can prove that robotic systems controlled by micros can meet the needs of industry then we're in business," said Adams. "The main difficulty is to persuade some sectors of industry that robotic systems are worth investing in."

Pack enables DEC machines to talk to IBM

A COMMUNICATIONS software package has been developed jointly by Scicon Consultancy International and AERE Harwell. The package, XN11 is one of a family of host interfaces. It enables IBM and Digital Equipment computers to communicate directly via an IBM channel. This means that an IBM mainframe using SNA can support a communications network conforming to non-IBM standards.

The host interface package provides a network gateway between any network architecture on DEC hardware and the IBM machine by emulating a sub-area of an SNA network such as would be created by a set of terminal clusters connected through an IBM 370X communications controller.

The two main modules of XN11 are the network interface between SNA and the DEC network, and the driver for the DX11, (the hardware connecting PDP-11 to IBM channel) which communicates with the IBM mainframe via VTAM. The channel interface is written in Assembler and the SNA emulation is in Coral 66.

Another module, the transport station interface, provides access to any given network. At Harwell the TSI supports Hans, a private packet switched network using Decnet line control protocols, but alternative TSIs could be used to support other styles of network such as X25 or Decnet.

XN11 complements rather than competes with DEC's own protocol emulator SNA-PE, which uses serial communications rather than the faster channel parallel method. The different scope of the two products is reflected in their respective prices. SNA-PE costs about £6,000 while the more comprehensive XN11 costs £25,000 for software and a further £13,000 for hardware.

Not that the price bothers the buyers for whom XN11 is a significant facility, typically multinational industrial and banking organisations. Scicon has already installed some XN11s and has orders from over a dozen organisations.

Copyright Bill is tabled in Congress

THE lack of a clear legal framework dealing with copyright causes problems to software dealers in the US, according to Dan Fylstra, president of Personal Software, one of the leading microcomputer software companies in the US.

Recognition of the problem has led to the tabling of a Computer Software Copyright Bill in Congress which, with the help of the Microcomputer Industry Trade Association should extend protection to software.

Fylstra, who is on the association's software copyright committee advising Congress, has his own ideas. "There are a variety of software-dependent schemes, but the best bet is to take technical measures to prevent copying."

He also pointed to the difficulties particularly relevant in the world of programming personal computers of a contract of employment giving employers rights and titles to the work of an employee.

This has led to the "stars" of large companies leaving to set up their own enterprises. Fylstra's own company, paralleled by Petsoft in the UK, grew out of these circumstances and the number of small micro-based enterprises is rapidly increasing.

However, such enterprises are threatened by the unclear law of copyright and a lack of understanding of the technology involved by the makers and interpreters of law. The Data Cash case in the US threw this problem into relief (CW, March 20). It was echoed by the MicroAcc case in the UK (CW, June 12) which neither Sinclair nor Cary wished to become a test case for UK copyright law.

The Computer Software Copyright Bill proposes: "it is not an infringement for the owner of a computer program to make or authorise the making of another copy or adaptation of that program provided: 1, that such a new copy is created as an essential step in the utilisation of the machine and that it is used in no other manner and 2, that such a new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful."

Fylstra is not alone in having doubts about the power and efficacy of the proposed law. Prof Bryan Niblett of University College Swansea is aware of a concern among US users that the new Bill weakens rather than strengthens the law, particularly in giving the lawful user certain rights which reduce those of the copyright owner.

Niblett is advising the DoI on the use of the present UK copyright law with regard to computer applications in a report which will be available in autumn.

Copyright specialist Alistair Kelman also expressed dissatisfaction with the US attempt to answer the copyright problem. "The bill is the computing equivalent of making the reading of a book an illegal act. It does not address itself to the major problem of information technology, that is the interaction of copyright works and computer programs.

"The definition of programs implies a single solution to the problem, which is not in line with current British thinking on the problem."

Spelling correction program for micros

A SPELLING correction program for micros is available from Southdata, a firm set up to market a variety of packages by "cottage industry" programmers.

The program, Corrector, corrects some spelling mistakes automatically and draws attention to the ones it can recognise but not rectify. It checks text against a 25,000 word list supplied by Oxford University Press and replaces incorrect words, giving a list of alterations and references at the end.

It works at about 60 words per minute and plans for the product include an "instant editor" for common typing errors such as double letters or reversed pairs and hitting neighbouring keys. Corrector runs on a Z-80 microcomputer, requires 150K on disc and 12K of core and costs under £250.

More efficient version of CP/M ops system

SEVERAL new products are on the market for the widely used small machine operating system, CP/M, which supports a broad array of languages and works on micro-based systems using Intel 8080, 8085 and Zilog 80.

Version 2.2 of the system is said by authors Digital Research of California to be more efficient and reliable as well as truly universal. The company has also released a modestly priced multi-terminal system compatible with CP/M, known as MP/M, which provides multi-programming facilities at each terminal as well as real time facilities.

Latest package from Digital Research for the use with CP/M and MP/M is a PL/I-80 and library which provides an Ansi general purpose subset of the language aimed at business, science, research and education users.

At the same time Info 2000 has introduced performance improvement software, called Turbocharger, which is said to accomplish diskette input/output three to five times faster than normal in CP/M applications, and to increase data storage on each diskette by 30%. It is available in the UK from BSH Electronics of Manchester for £165, including Version 2 of CP/M.

CP/M was named on the Datapro Honour Roll in 1979 and is widely used throughout the world.

Virtual machine option

A TIME sharing operating system for Digital Equipment PDP-8 kit known as Etos, is to be marketed in the UK by DEC specialists Computer Applications Ltd of Chorley, Lancs.

Using firmware, Etos is said to make the PDP-8 a virtual machine, transforming single user PDP-8s to multi-user time shared systems running under COS/Dibol and OS/8.

The system allows up to 16 people to use the machine, each user having up to 32K-bytes available. CAL is selling Mark ... of Etos for about £3,000, aiming for a user-base of around 10,000 PDP-8s in the UK, many of which are in the educational market.

The system was originally developed some years ago in the US to enable multiple users to develop programs in Basic or Fortran.

FLOPPY DISKS?

SLOPPY STORAGE?

Tray or binder storage – you name it, Twinlock makes it. And makes it better.

In fact, Twinlock floppy disk accommodation provides the most comprehensive, efficient and (dare we say it) attractive means of keeping your recorded information safe, sound and readily accessible.

FLOPPY DISK TRAYS: These steel trays come complete with smoked perspex top, support plate, guide cards, and full colour-coded index system. 100 or 50 disk capacity. Multi-Stor cupboard or trolley housing is available.

FLOPPY DISK BINDERS: Hand-bound by craftsmen, these quality binders have 8 panels, each holding six 8" disks.

Binders come in standard book form or in 'easel' configuration which presents disks in a convenient position for the operator.

So choose Twinlock – and put an end to sloppy floppy disks!

I'm tired of sloppy storage for my floppy disks. Please send me details of your range.

Post to FREEPOST, Twinlock UK Limited, Croydon Road, Beckenham, Kent BR3 4BH. CW/3/7

Name

Position

Company

Address

Tel No

Twinlock

Twinlock UK Limited, Croydon Road, Beckenham, Kent BR3 4BH. Tel: 01-650 4818.

OP SPOT

by Bernard Allen

A troubleshooter who is on call day and night

LIKE so many other members of the operations fraternity, Paul Butterworth must be able to work with speed and efficiency any time of day or night.

As the head of technical administration at W. H. Smith's in Swindon he has many duties, one of which is being on call 24 hours a day, seven days a week.

It's a challenge which the confident Butterworth meets with great relish, as was obvious when I spoke to him the other week.

"I'm fully prepared to take calls 24 hours a day, seven days a week in the event of a machine crash. The operators have got an escalation list — if they can't get hold of me they'll try my hardware specialists.

"I might get called out in two or three months or several times in a week — it all depends."

On such occasions Paul will be on site within half an hour or so with the intention of getting the ICL 2976 up and running to continue the user service as quickly as possible.

The first step is to work out whether the failure is due to hardware or software. If it's a software or applications problem he'll call for support from the relevant area.

In the event of hardware failures, the site's two resident engineers have an hour to tackle the problem. If they have no success they will contact their area manager for specialist hardware support.

"If it's a software matter, the support person and myself will pore over it until it's resolved. Hardware problems — well, the residents have an hour to get things sorted out. After that I'll want them to get hold of support engineers as fast as possible."

Often it's a case of weighing up whether to hand the machine over to the engineers or to continue running with a reconfigured or degraded system.

"The point is that you're providing a service to the user. You've got to find the way of getting as much of the scheduled workload done as possible."

Day shift at the installation also provides Paul and his three hardware specialists and technical assistant with many kinds of stimulating and challenging problems.

"The phone might go, or someone might come through the door and present us with something that's got to be sorted out. My lads will follow the problem through and ensure that it gets acted upon.

"In the tracing of a problem they'll go through the hardware loop to see if the fault lies there. If it's not that, they might well have to go and discuss matters with software support or the suppliers.

"They come into contact with all sorts of people in the course of their problem solving. They get an excellent practical training, they really do."

The computer room environment, not just at Swindon but at all W. H. Smith's sites, is another area of responsibility for Butterworth and his hardware specialists.

That function includes the evaluation and purchase of air-conditioned equipment, power supplies and anything else involved in the building of an environment in which a computer is to be installed.

"One of our lads is an adept draughtsman, which is really handy because we provide drawings for the contractors to work from.

"Then we call in all the suppliers and say 'This is what we want from an operations viewpoint. What can you do for us?' "

The technical administration section also orders all the "bits and bobs" — discs, floppy discs, stationery, printer ribbons and so on — needed for the day-to-day running of a system.

"We have to ensure that we've got enough both for our own use here at Swindon and that of our other sites, should they have problems with their usual suppliers."

As if that's not enough, Paul's section also liaises with software support, giving the operational view of how new packages they propose will fit in and affect the existing system.

"They might say 'We like the look of this software package' and we'll look at it and give the practical operations viewpoint."

Butterworth entered the operations field with Barclays Bank in Tottenham Court Road some ten years ago.

Prior to that he was with the bank first as a clerk, in charge of a sub-branch in South Wales, and then as a member of a management accounts team.

"The shift allowance was a big factor in my decision to enter operations — it was quite a large sum of money at the time.

"I got a first-class training at Barclays Bank. But I wasn't interested in taking the banking examinations and there seemed to be little chance of me progressing any further."

Butterworth had a long stint as a shift leader and shift supervisor with Burma Castrol before taking up his current position.

Lads doing well

BOTH of the lads have passed all their exams and, all things consider[ed], have done very well so far. That's not a bad progress report for [John] Gregor and John Thompson, Threshold students at St Helens College of Technology.

It comes from David Fletcher, head of the DP division at the college, who told me that the students still have eight weeks of the course to complete.

According to Fletcher, they are currently working at sites in industry. And if they do all right both will get their Bec/Tec National Certificate in Computer Studies.

John Thompson is working at Mossley Borough Council, where they run an ICL 2950 from nine in the morning till five in the evening.

He said, "I've been doing peripheral work mainly, loading tapes and printers. But they do let me run the main console when we're less busy. It's going well and I'm enjoying it."

John Gregor is currently operating an ICL 2904 at British Insulated Callender Cables in Leigh, Lancashire. Obviously making very good progress, he told me: "It's going all right. I've been doing a lot of console work as well as mounting discs and tapes.

"I also wrote a macro which is now on the library as a part of a payroll program. It worked first time — I was pleased with that."

Automating the tape library can be cheaper than hiring a librarian

AT many installations, little attention is paid to the magnetic tape library until it has grown to the point where staff have difficulty in locating files which are needed for processing.

When that happens the manager might well employ a librarian on a part- or full-time basis. He will be responsible for checking media in and out of the library.

An alternative method is to install an automated tape library, some of the advantages of which are outlined in a paper called The Automated Tape Library, from Ausrbach.

A part of the Data Centre Operations Management* services, it says that the manager should commit himself to an automated tape library before the library grows too large and caused problems for the operators.

It says that a good librarian can handle as many as 4,000 tapes, but points out that human error is inevitable and that backup must be available when the librarian goes on holiday or sick leave.

According to the author, the monthly rental of an automated tape library package will probably be less than a librarian's salary over that period.

Managers are advised to select their automated library with great care. It's best to talk to their managers who have already installed one.

Once a package has been selected, the manager should encourage his operations staff to become involved in its planning and installation.

The author concedes that there will be initial problems but goes on to say that they will be of a psychological rather than a technical nature.

"The operators may feel uncomfortable about procedural changes. Data control employees may complain about the difficulty of re-running jobs (they will no longer be able simply to change the control cards, go back to the prior file, and re-run).

"The data centre manager and his management staff may be uncomfortable about the removal of external tape labels and even more uncomfortable about processing production tapes with file protect rings in place."

He goes on to say that such fears are unfounded, but advises the manager to give his staff time to get used to the automated library.

*Data Center Dialog, vol 4, [...] Auerbach Publishers Inc. Distributed in the UK by Computer [...] for Management, 156 Great [...] Street, London W1. Tel: 01-[...]

Final statement on eye tests

THE VET Advisory Group has followed its discussion document on eye tests for VDU operators (CW, December 7, 1978) with a final statement on the subject.

The booklet includes a list of recommended eye tests which, due to the urgency of the matter, have been selected from those currently available in the UK.

For further information contact Tom Stewart at Butler Cox and Partners, 26 Holborn Viaduct, London EC1A, 2BP. Tel: 01-583 9381.

Introducing the most advanced Microprocessor Pascal Development System ever. For only £35.

Come to the Cumberland Hotel, London on 30th July 1980. And for £35 you can attend a complete, introductory seminar on the most powerful Microprocessor Pascal Development System commercially available. From Texas Instruments.

We've taken the inherent advantages of Pascal and incorporated them into a completely self contained development system that is both versatile and highly cost-effective.

Our Source Editor contains an automatic syntax checker. The new Host & Target debugger allows you to use Pascal at all levels for fast and efficient testing. And our concurrent real time Executive system is the most advanced high level language development for microprocessors today. Don't, however, simply take our word for it. Come to the seminar and see for yourself.

The 'hands on' demonstrations will show you not only how the system works but also how it can be applied. And we will provide detailed explanations and answer any questions you may have. Whether about the system itself or how we can help you to apply it in your business.

To: Dept. MS 36, Texas Instruments, Manton Lane, Bedford MK41 7PA. Tel: Gina Penman 0234 67466 Ext. 3909.

TEXAS INSTRUMENTS

Fifty Years of Innovation

To: Dept. MS 36, Texas Instruments, Manton Lane, Bedford MK41 7PA. Tel: Gina Penman 0234 67466 Ext. 3909.
Please reserve me ____ tickets at £35 each, for the seminar on July 30th 1980. (Cheques/Postal Orders should be made payable to Texas Instruments Ltd).
Name ____
Company ____
Position ____
Address ____
Tel. No. ____
CW1

Your Microelectronics Partner for the 80's.

PEOPLE and EVENTS

Ichbiah leaves CII-HB to develop Ada

ADA designer Jean Ichbiah is leaving CII-Honeywell Bull, where he was responsible for the software division of the research centre, to set up a consultancy which will specialise in the development and marketing of software using advanced technology.

The name of the company will be Apsys, a kind of dual mnemonic which can stand either for Ada Programming Systems or Applications et Systèmes. It will start by developing and promoting the Ada language.

A special relationship has been established with CII-HB, which feels the need for maintaining the European lead in the development of Ada, and has taken a 15% holding in Apsys.

Girl technician prize

THE engineering industry needs to attract more bright trainees, especially girls, many of whom do not consider engineering as a possible career. The Girl Technician Engineer of the Year award was set up to draw attention to electrical and electronic engineering as a career for women.

The winner of the £250 prize is an outstanding girl technician engineer who has followed the appropriate training and has proved herself by holding a responsible job. It is hoped that by her example she will encourage more girls to make a career in electrical and electronic engineering.

The last date for nominations this year is October 1, 1980. Details and nomination forms can be obtained from Mrs Eileen Sheldon, IEETE, 2 Savoy Hill, London, WC2R 0BS, tel: 01-836 3357.

The award is sponsored by the Caroline Haslett Memorial Trust and the Institution of Electrical and Electronics Technician Engineers.

Attired in a company T-shirt, Baric MD Kier Hopkins takes instruction in driving a March Formula Atlantic racing car from its owner, Baric salesman Roger Orgee. Roger is sponsored by Baric, and the company is staging a series of customer hospitality days at circuits around the country where he will be racing. Last year, he finished second in the BRSCC National Formula Libre Championship.

University post

PROFESSOR Morgan Howard Williams (left) has been appointed to the Chair of Computer Science at Heriot-Watt University, Edinburgh.

Williams was born in South Africa in 1944 and gained BScs in Maths and Physics from Rhodes University, South Africa. From 1967 to 1969 he was physicist with an Antarctic expedition, and in 1971 was awarded a PhD in Physics for his thesis on Diurnal and Seasonal Variations in the F2 Region of the Antarctic Ionosphere.

He joined the teaching staff of Rhodes University, and in 1979 became head of the Department of Computer Science. He is co-editor of the computer journal Quaestiones Informaticae.

Mike Roe, until recently government sales manager with SIA, has joined CSC London as general sales manager and director designate. **Mike Tuohy**, from ADP Computer Services, **Walter Rotherham**, from the US, and **David Robinson** from Rank Xerox have joined CSC as marketing executives.

Mike Evans has become sales support manager for communications products with Arbat. His most recent job was as senior systems consultant.

David Steadman has become a vice-president of Raytheon in the US, heading the intelligent terminals operation in Massachusetts. He returns to Raytheon after a year and a half as chief executive of EMI's medical electronics operation.

David Warren, previously national sales manager with CPT, has joined Supertyper as sales director. He replaces **Patricia Hokke**, who becomes marketing services director.

Martin Waine has been appointed sales manager for data and text communications at Pye Business Communications.

Brian Perry has been appointed operational research manager at GMS Computing.

Four men have been appointed at LogAbax. **Gerry Cook** is to be UK products marketing manager. He was previously systems marketing manager and before joining the company was with Honeywell and Adler Business Systems.

Previously with Datasaab, **Bryan Senior** becomes sales manager for Western and Northern regions of the UK. **Ron Goodman** has been promoted to UK dealer manager and **Mark Powell** has been promoted from systems analyst to UK software manager.

Gerald Perutz has become an executive vice-president of Bell & Howell in the US, with responsibility for all the company's operations outside the US, as well as some within it. Until 1977 he was general manager of Bell & Howell European region; he left to become a corporate officer at the company's Chicago HQ. He is still chairman of Bell & Howell Ltd.

Conservative MP John Butcher has joined the board of ACT Computers of Birmingham. Butcher is 34 and entered Parliament at the last election, as MP for Coventry South-West. He is vice-chairman of the All-Party Information Technology Committee and a secretary to the All-Party Committee for the Legalisation of CB Radio.

Bob Brown has been appointed as senior systems consultant with Arbat (UK). Among his responsibilities will be the development of Arbat's banking and communications systems. Brown joins Arbat from Scicon.

Formerly a Systems Designer in the Application Development Division, **June Bush** becomes senior systems consultant with particular responsibility for the Intalex range of message switch products.

Mike Hudson has been appointed microprocessor systems manager at National Semiconductor's Bedford sales office. Hudson joined the company from Texas Instruments, where he was a consumer field sales engineer.

Peter Lea has been appointed UK national service manager of A. B. Dick, the GEC subsidiary. Lea, who has held a number of senior marketing posts at ICL, will be responsible for all operational, technical and commercial matters in connection with customers.

A second A. B. Dick appointment is that of **Eric Springala** as director of marketing. He joins the company from Sperry Univac where he was international marketing manager in the Business Systems Marketing sections.

SOCCER

Summer Computer League

THE Summer Computer League is now well under way and here is the first batch of results for the season:

Division 2
ICL 2, Datasolva W.E. 0
Datasolva W.E. 5, Compton Raiders 0
Compton Raiders 1, NCR 'A' 3
Compton Raiders 0, Forest 8

Division 3
Vantek 0, British Aerospace 9
SBS 1, Jadpu 'B' 0
Gill & Duffus 7, Vantek 4
British Aerospace 5, SBS 1
Gill & Duffus 2, British Aerospace 2

Division 4
SIL 2, Kingston 5
Logica 3, NCR 'B' 2
Kingston 2, Logica 4
Logica 2, UCSL 3

Division 5
Atkins 0, Hoskyns 4

Cup (First Round)
West London Xerox 0, Forest 8
Compton Raiders 0, Computer Weekly 3
British Aerospace 3, Hoskyns 1

DIARY

JULY 15
Debate, Pascal is not a practical programming language/AGM. ACM, UK chapter, BCS, 13 Mansfield Street, London W1, 6.30.

JULY 17-18
Meeting. IBM Computer Users' Association Local Authorities Group. Shire Hall, Warwick. Details: Mrs Speciale, 01-551 1643.

JULY 21
Solution of linear programming problems with staircase structure. Prof O. B. Madsen. BCS Mathematical Programming Study Group. London School of Economics, London WC2, 6.30.

SEPTEMBER 23-26
Micad 80, CAD conference. Micado. Paris.

SEPTEMBER 24
New technologies for information retrieval. BCS Information Retrieval Group. London.

NOVEMBER 6-7
Minis, micros and terminals, conference. BCS/IIS, Manchester.

NOVEMBER 14-16
More than just techniques, conference. British Production and Inventory Control Society. Blackpool.

DECEMBER 10
Computers in museums. BCS Information Retrieval Group. London.

Ferranti sales move

FERRANTI'S computer department has moved from its Bracknell address to new premises in Wokingham, also in Berkshire. The department was set up to market the F100-L micro, and will now extend its facilities to include the M700 mini.

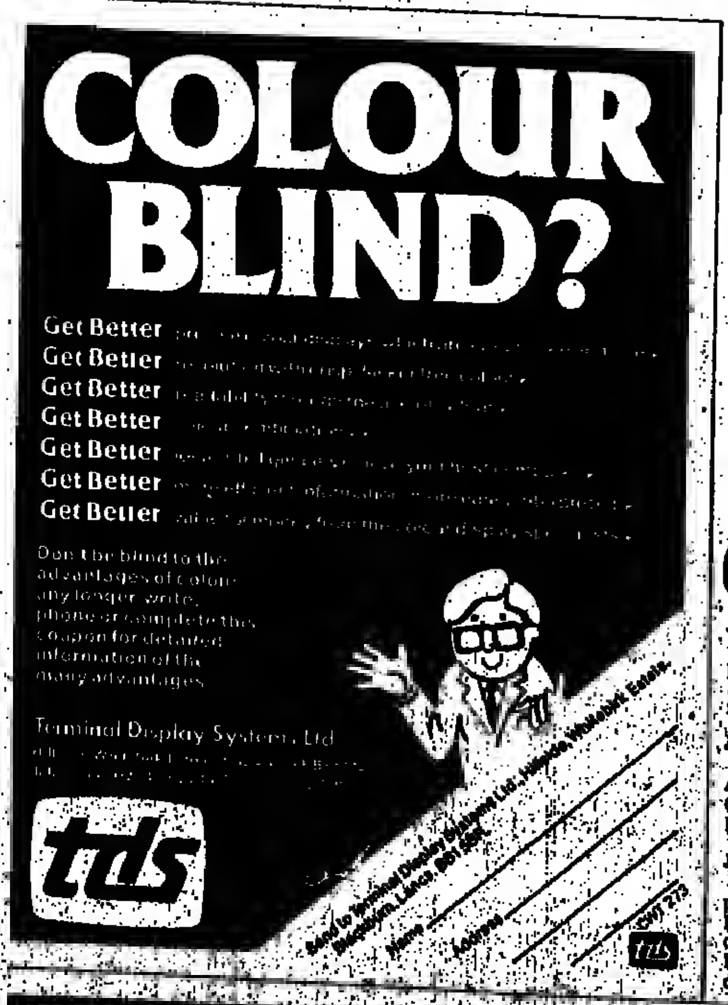
The address of the department is The Courtyard, 20 Denmark Street, Wokingham, Berks, RG11 2... 0734 790079.

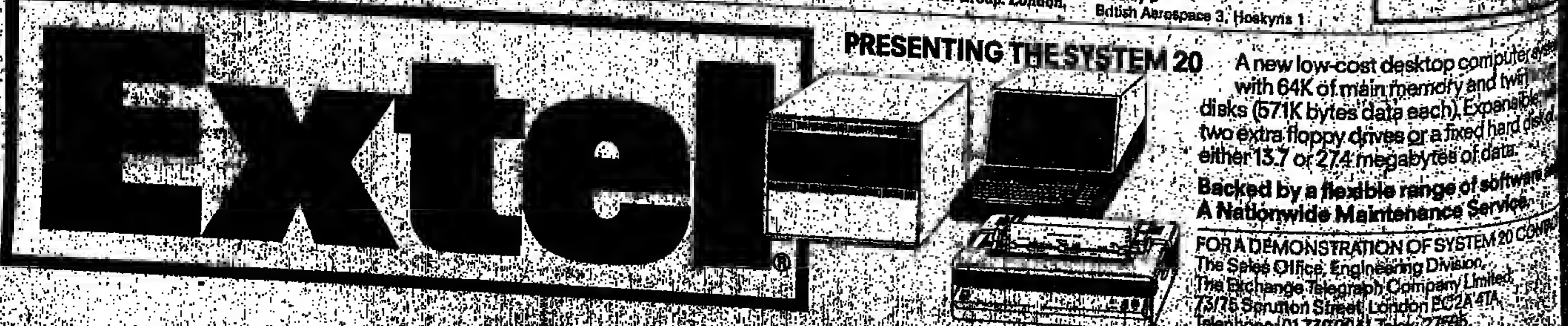
Midlands branch

SYSTEMS house Distributed Computer Services has opened a Midlands branch, managed by ... Mitchell.

The new address is ... House, Bristol Street, Birmingham. Tel: 021-622 6448.

Richard Hunt, from ..., where he was a sales engineer, has joined Peripheral Hardware as central area executive. **John Dunk** has become a sales executive at Peripheral. He joined the company from the systems and instrumentation division of Marconi Space and Defence, where he was a sales engineer.





No government go-ahead for ICL licence fee

IN its letter to ICL agreeing to accept only limited changes to ICL's commercial practices (CW, June 26) the Office of Fair Trading informed ICL that the agreement should not be taken by ICL as an irrevocable acceptance of the principle of the licence fee or levy that ICL charges customers who install compatible hardware from other manufacturers.

Moreover, the OFT told ICL that the agreement did not preclude the possible future use of the Office's powers under the new Competition Act. The Act should give the OFT much wider powers and was the main factor which persuaded it to start talking directly to ICL late last year (CW, December 13, 1979). The Office had been lobbied for several years by companies affected by ICL's practices, including its foreign attachments policies.

The changes in ICL's attachments policies include a reduction in the maximum levy on locally attached peripherals from 20% to 15%, and the introduction of uniform pricing for all EDS 60 controllers on 1900 systems. ICL used to charge a very high price for the first EDS 60 controller on a 1900 system and very little for additional controllers, thus pricing any plug-compatible disc system supplier out of the market.

But one of the leading complainants, Ken Annan of Teknos Systems, said that the EDS 60 business was now effectively dead, so that this change had come too late. Teknos used to offer a plug-compatible EDS 60 replacement.

Annan said that Teknos was still hoping that its complaints to the EEC about ICL would lead to ICL being forced to compensate Teknos for its loss of business. Under articles 85 and 86 of the Treaty of Rome, the EEC Commission could in theory fine ICL up to 10% of its previous year's turnover as well as ordering ICL to cease its violation of the Treaty if such violation were proved.

Add-on memory supplier Systems Reliability made similar complaints to the EEC and one of its customers, the Norwich Union Insurance Group, was the first individual user to publicly challenge the attachment policies (CW, February 24, 1977). See Computerview, page 2.

Tony Evans, marketing director of Systems Reliability, told Computer Weekly, "This agreement between ICL and the OFT will not benefit us at all. ICL has won. It has got away very nicely."

Referring to one of the other points in the OFT agreement, Evans pointed out that ICL's undertaking to provide store extension units as separate units subject to the availability of returned and refurbished units was meaningless, because no units were available. Asked to comment on this, ICL said that it expected more extension units to become available as more 1900s came back from users.

One other undertaking made by ICL was that it was prepared to carry out standard modifications to an ICL system to accommodate a non-ICL device for "a fair and reasonable charge". Ken Annan of Teknos commented, "What is a fair and reasonable charge?" ICL said that such a charge was one that was not excessive.

AS part of a display on employment and training aimed to make MPs more aware of the work of the Manpower Services Commission and the Department of Employment, a Prestel set was installed for one week in the House of Commons Upper Waiting Hall by Radio Rentals Contracts. The Central Office of Information manned the set to demonstrate the range of information on employment that is available on Prestel from both government and private sources.

St Gobain plans to gain control of CII-HB

A CONVOLUTED series of financial transactions which will give Compagnie des Machines Bull 20% of Olivetti to put beside its 53% of CII-Honeywell Bull is planned by the French industrial conglomerate St-Gobain-Pont-à-Mousson. At the same time St Gobain will get a controlling 51% stake in Compagnie des Machines Bull, giving it effective control of CII-HB.

The French government's involvement in Machines Bull falls from 20% to 10%, various banks have another 10%, and small shareholders see their stake diminish from 60% to 29%. Under French company law a "blocking minority" holding is 34%, so there is no single group which can block any St Gobain proposal without mobilising a substantial number of the small shareholders.

There is no question of CII-HB and Olivetti actually merging in the foreseeable future, since St Gobain's Roger Fauroux and Olivetti's De Benedetti have signed an agreement excluding a merger for five years.

The mechanics of the arrangement are that Cedames, a holding company owned 75% by St Gobain, and which holds the latter's Olivetti shares, will be taken over by Compagnie des Machines Bull, through an issue of new shares. The other 24% of Cedames is split between a group of banks, which have 20%, and Sofimetique which has 4%. St Gobain has 70% of Sofimetique, the other 30% being held by Société Générale.

As well as the Olivetti shares, Cedames is the holding company for 10% of Compagnie Financière de Suez, and, believe it or not, 5% of St Gobain itself. These holdings will of course also pass to Compagnie des Machines Bull. Thus the rearrangement is to be affected without any money changing hands.

St Gobain hopes that the new arrangement will lead to closer co-operation between CII-HB and Olivetti, particularly in the office automation field. Apart from some OEM business, CII-Honeywell Bull does not operate in Italy, its products being sold there by Honeywell Italia. The latter is a 100% subsidiary of Honeywell Inc, which also owns the other 47% of CII-Honeywell Bull.

Raising the productivity of managerial staff

OFFICE automation could be saving 15% of the time of managers and professionals by 1985 in organisations prepared to commit "sizeable resources" to bringing in new techniques. That is the principal conclusion of a multi-client study on the use of electronic office equipment by professionals, carried out by New York consultants Booz Allen & Hamilton.

Harvey Poppel of Booz Allen has long been a proponent of the idea that office automation should seek to raise the productivity of high-paid executives and professionals rather than that of lower-paid clerical staff.

The 300 staff in a range of US firms that were interviewed felt that on average they spent 25% of their time in less productive activities which did not make good use of their time, such as clerical tasks, finding and screening information, and scheduling and organising work.

Electronic support tools should save between 10% and 30% of the time of "knowledge workers" by 1985, the Booz Allen study found, with a 9% improvement achievable within 18 to 24 months for those ready to move ahead aggressively. The quality of work should also be improved.

Cobol for Rapport

LOGICA has announced the promised Cobol interface for its compact and portable relational database system, Rapport, which was launched last year with only a Fortran interface.

Despite the fact that most of the 40 or so existing Rapport users are technically oriented, Logica says that about 20 of them have expressed a strong interest in a Cobol interface for the system. Customers with the keenest interest, according to Logica, are users of 32-bit minicomputers like the Digital Equipment VAX-11/780 who want to set up a small commercial database.

Logica developed Rapport originally in co-operation with the Royal Armament Research and Development Establishment at Fort Halstead near Sevenoaks, Kent, and has strengthened its position in the military sector with the introduction of a Coral interface.

Other enhancements to Rapport include multi-level record protection where protection can be applied to selected records and to selected fields within records.

A FREE DATA PROCESSOR WITH EVERY WORD PROCESSOR

If you want to improve your efficiency with word *and* data processing, there is no need to buy two systems.

With a Videocomputer from AM Jacquard Systems you can carry out all your word processing activities on the top rated* system. And you will automatically have a powerful data processor at no extra cost.

Both functions may be carried out simultaneously and the system can also communicate from one office to another.

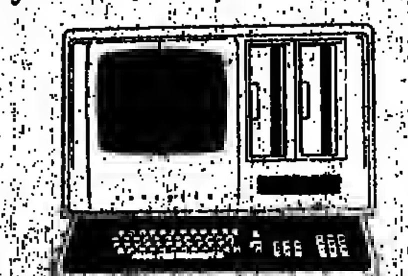
The automated office in one system.

The range of AM Jacquard Videocomputers includes both multi-user and stand-alone systems. Prices start from under £10,000.

For more details simply send us a copy of this advertisement with your name and letterhead to:

Roger Neill, UK Sales Manager, AM Jacquard Systems Limited,
Times House, Station Approach,
Ruislip, Middlesex HA4 8LE.
Telephone: 08956 74101.

*rated no. 1 in Datapro User surveys in 1978 and 1979.



AM Jacquard Systems
for the automated office

MICRO NEWS

by Eileen Staine

Double challenge to Sinclair portable

A CHALLENGE to Clive Sinclair's portable computer system, the ZX80, has come from Newbury Laboratories in the UK and from Sharp in Japan. Although the newcomers differ with respect to size, power and capability, both can be battery operated and both offer battery backed RAM.

Newbury Labs' NewBrain (pictured right) fits into a briefcase while Sharp's PC1211 is a pocket size hand held device. Due for UK launch in July, the PC1211 will cost £110 with an optional cassette tape recorder at £20.

The PC1211 has a full alphanumeric keyboard with a reservable 18-function key system, and a 24 character dot matrix display. It is capable of standard Basic programming utilising 1,424 bytes of NOV-RAM, and has 208 bytes of data memory. The PC1210 has only 400 bytes of program memory and 26 bytes of data memory.

On the surface it seems that both devices have a memory limitation as most software packages supplied in Basic for personal computers require at least 7K-bytes of RAM.

The problem can be overcome by a system of loading a small portion of the program at any one time from the cassette and working through the program in sections.

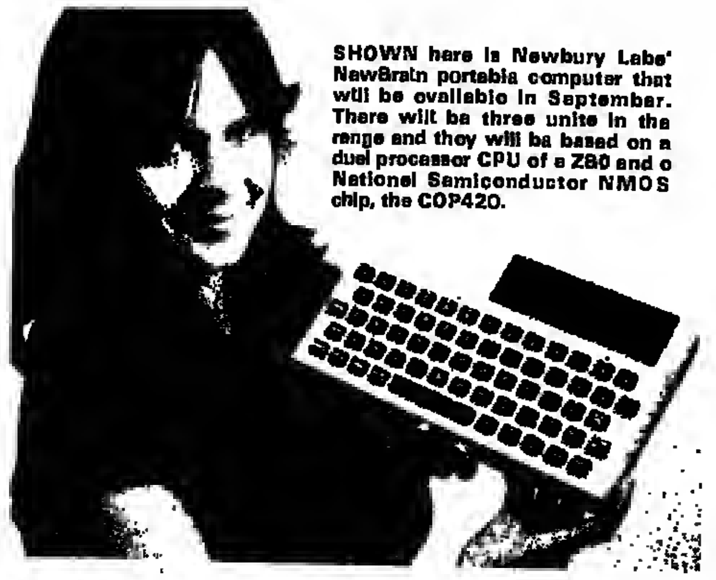
Another problem is the liquid crystal display which can only hold one line of data 24 characters long. However, the company is in the process of developing a liquid crystal strip that can display four lines of 80 characters, rolling left to right to show 40 at a time.

In the UK, the PC1211 is a direct competitor, price-wise, to the Sinclair ZX80 (CW, February 7), but this does not have battery backed RAM or battery operation. Measuring 9 × 7 × 2 inches, it is twice the size of the PC1211, but its size and price do not include a display.

The ZX80 is far more powerful than the PC1211. It is Z80-based and has the equivalent of 4K-bytes of RAM, expandable to 16K-bytes.

Both companies appear to be aiming at the user with little or no computer knowledge, as they have provided a push-button facility for simplifying programming.

One important advantage Sinclair has over Sharp is on the software scene. ACT Petsoft is to supply software packages for the ZX80 from August.



SHOWN here is Newbury Labs' NewBrain portable computer that will be available in September. There will be three units in the range and they will be based on a dual processor CPU of a Z80 and a National Semiconductor NMOS chip, the COP420.

Newbury Labs' kit is based on dual processor

NEWBURY Laboratories' challenger to Sinclair is the NewBrain range which comprises three units and the first is expected to be launched in September. Called the M series, it costs about £60 more than Sinclair's ZX80 which Clive Sinclair has said will cost £99.95 by mail order.

The M series operates on mains only and requires the use of an external video terminal. However, it is said to be more powerful than the ZX80 and has a much larger capacity.

The other two units in the range, the MB series and the MBS series, differ slightly. The MB costs £105, operates from mains or battery and has its own display, while the MBS is the same as the MB but costs £245 and has a lower power consumption. Both have battery-backed RAM.

The power of the NewBrain range stems from its dual processor CPU; a Z80 does the processing while a National Semiconductor NMOS microcontroller, the COP420, controls display, keyboard and the peripheral drive interfaces. Standard memory capacity for the three devices is a choice of 2 to 4K of static or 16K of dynamic RAM.

Capacity can be increased extensively in each unit by the use of an expansion box, which comprises two PCBs. The box can contain most combinations of systems ROM, applications ROM and user RAM with limits of 3 mbytes, 4 mbytes and 4 mbytes, respectively.

Newbury Laboratories claims the NewBrain is twice as fast as Commodore's Pet. The reason given for this is that the software includes compiled Basic as opposed to the interpreted Basic used in other systems, although the speed is only noticeable when running large programs.

Eight I/O ports include two for analogue interfacing, two for a dual audio cassette interface, a V24 interface for printers and VDUs, a composite video output, an ordinary television interface and a bus-connector for add-on modules.

Texas additions

ADDITIONS to Texas Instruments' TM990 16-bit microcomputer family are to be made in miniature form. The TM990/E series will be available on 100 x 160mm boards.

New Chair created

A £250,000 Chair in microprocessor applications in industry is to be set up at Manchester University backed by Barclays Bank.

3 modules expected for Christmas

THREE modules are expected time for Christmas from Newbury Labs. One is an add-on supply a further set of I/O parallel ports and another enable users to generate data characters while the is a disc drive module which likely to be introduced with CPM compatible disc operating system.

On the software side Newbury is developing a small number packages in the next six months but hopes a software house eventually take over.

ACT Petsoft is currently reviewing the situation and aiming to offer software for six best selling systems that have been announced up to

At the moment system software comprises a full screen editor, a line editor, a Basic compiler and an operating system. High speed floating point arithmetic (multiply takes less than 2ms) accurate to significant figures is included along with trigonometric inverse trig functions.

In development now hoped to be ready by Christmas are assembler, Cobol and modules and utility packages written in Basic and assembler code.

Initially Newbury will be distributing and marketing from base in Odiham, Hants but a few retail outlets are under consideration as alternative distribution sources. The company hopes to supply 1,000 units during September and 3,000 month by Christmas.

Small version for US market

A SMALLER version of Sharp's portable computer system being planned for the US direct competition to the programmable calculator market.

However, this will only happen when a printer attachment is available and that is not expected until the end of the year. The US version is expected to be the size of a pocket electronic typewriter.

Games firm goes personal

VIDEO games specialist, Atari of the US, has launched home computer systems which will be distributed in the UK by Ingersoll Electronics.

Both the 400 and 800 series systems are based on Mos Technology's 6502 microprocessor, have full keyboards with ability and are programmed in Atari Basic. Differences in memory capacity and system capabilities.

The 800 system which costs about £750 has 8K of RAM expandable up to 48K and 8K ROM expandable up to System 400 which costs under £400 has the standard with no expansion capability. In appearance they differ slightly and the 800 version has an ordinary keyboard, while the 400 has a touch-sensitive keyboard.

Low power high speed 6802

A LOW power high speed version of Motorola's 6802 8-bit CPU is being made by Mitel of Canada and will be distributed in the UK by Pronto Electronic Systems in Essex. Designated MD46802, it is expected to be available by Christmas and uses Mitel's ISO- CMOS process rather than ordinary NMOS that Motorola uses.

System operation is carried out at 5MHz as opposed to 1MHz of the MC6802. Operating power dissipation is only 15 milliwatts with 600 milliwatts on the Motorola chip.

10

1970-1980

10 Years The Computer Professionals

From somewhat modest beginnings, we've grown into the largest supplier of computer software based in the U.K. In just ten years we have established twenty centres throughout this country and Europe; now our staff numbers over 1,500 and our turnover's topped 25 million.

In the 80's our range and quality of services and products have been strengthened even more, meeting the challenges of changing business situations and fulfilling our clients' needs.

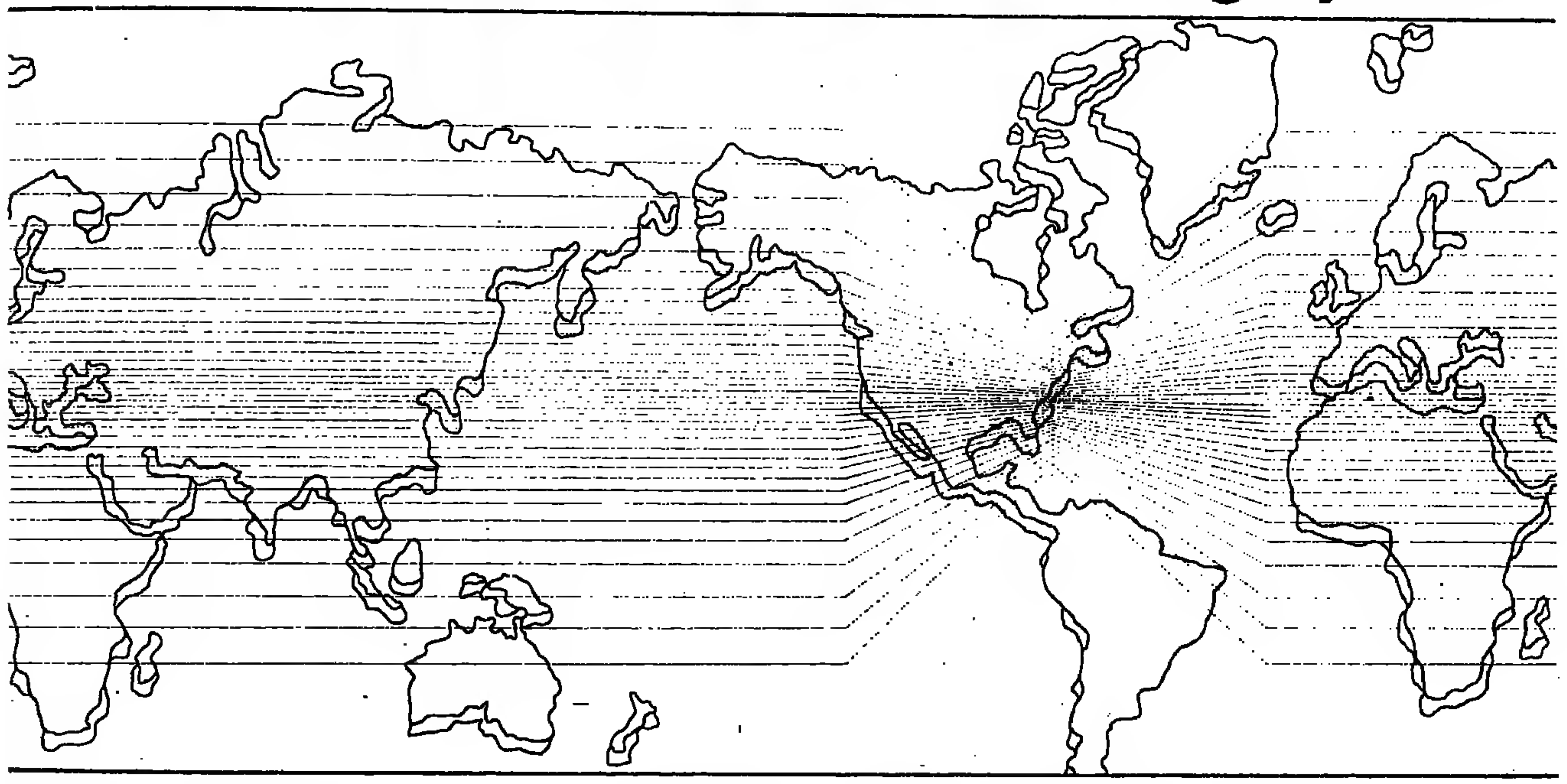
We've grown up a lot in ten years.

A Decade of Dataskil

ICL Dataskil, Reading Bridge House, Reading RG1 8PN, England.
Telephone: Reading (0734) 581288 Telex: 22871

SHARP APL

A High Performance Time-Sharing System



No matter where in the world you do business, SHARP APL can be the solution to the gathering, storing, processing and distribution of your business information.

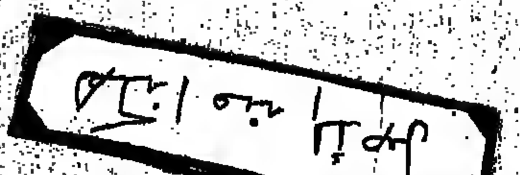
What is SHARP APL? It's the data processing tool used by many multinational corporations to solve the same business problems you face every day – budget consolidation, financial analysis, order entry, and corporate planning. SHARP APL data bases can provide you with on-line business information on subjects from airlines, energy, and insurance, to banks, stocks and bonds.

Our state-of-the-art computer network is backed by large-scale computer resources to allow you to share programs and data with colleagues in your subsidiary and branch locations. And our network interconnects with most commercial networks, including TELEX, to offer you access to SHARP APL from virtually any location in the world.

If you prefer to operate a time-sharing service on your own in-house computer, we'll install SHARP APL with any standard IBM-supported operating system. We'll also connect your computer to our network to let you have worldwide access to your system. Either way, you and your colleagues will have the power of **a high performance time-sharing system.**

For SHARP APL service or SHARP APL software, call any one of the I.P. Sharp offices listed below and we will make it happen for you.

SHARP APL... Your instant international computer network.



I.P. Sharp Associates

Aberdeen, Amsterdam, Atlanta, Boston, Brussels, Calgary, Chicago, Copenhagen, Coventry, Dallas, Dublin, Dusseldorf, Edmonton, Gloucester, Hamilton, Houston, Liverpool, London, Los Angeles, Manchester, Melbourne, Miami, Milan, Montreal, Newport Beach, New York City, Oslo, Ottawa, Palo Alto, Paris, Philadelphia, Phoenix, Rochester, San Francisco, Saskatoon, Seattle, Stockholm, Stuttgart, Sydney, Toronto, Vancouver, Victoria, Vienna, Washington, Winnipeg, Zurich.

International Headquarters: I.P. Sharp Associates Limited, 145 King Street West, Toronto, Ontario M5H 1J8, Canada. (416) 364-5361.

European Headquarters: I.P. Sharp Associates Limited, 132 Buckingham Palace Road, London, England SW1W 9SA. (01) 730-0361.

U.S. Headquarters: I.P. Sharp Associates, Inc., 1200 First Federal Plaza, Rochester, New York 14614. (716) 546-7270.

Fujitsu's OEM deal opens Euro door

FUJITSU's OEM agreement with Siemens on large mainframes is proving to be the Japanese company's most successful onslaught on the European market.

In its first year of marketing, Siemen's has been much more successful than Amdahl in persuading large commercial IBM users to buy plug-compatible; it now has four machines installed, five on order and firm letters for four more.

Siemens has overcome an obstacle which Amdahl does not have to face: persuading MVS users to run their programs under the compatible but different BS3000, the Siemens name for Fujitsu's OSIV/F4 operating system. Siemens claims the BS3000 is at least 10% more efficient than MVS.

The first Fujitsu machines installed outside West Germany has gone to Computer Centre Limbourg, CCL, in Holland. A government computer centre and already a Siemens user, the centre wanted to be able to run IBM programs and has installed a 7.870.

Apart from the installations at the Hahn Meitner Institute in Berlin and Datev in Nuremberg (CW, September 13, 1079), the other machine already installed is a 7.880 at an unnamed banking data processing centre in Southern Germany where, following proving trials, it will replace one of two IBM 3033s.

There are 7.880s on order at the Max Planck Institute in Munich to replace an IBM 380/91, at mail order and department store chain Quelle, where it will replace a 370/168MP and run alongside a 3033, and at the Geovor centre for the West German army.

Geovor wants the machine for a new, classified application and chose it in preference to a CDC Cyber 175 and a 3033. The new 7.865 model, which is priced 20% below the 3031 but claimed to offer 30% more power, is on order for Munich farm equipment company Baywa, and for the DAS insurance company.

The 7.880 is Fujitsu's M-200, rated at 6.2 mips against 8.8 mips for a dual processor 3033. The 7.870 is Fujitsu's M-180 and the 7.865 is based on the M-180AD.

The one big difference between the Japanese and the IBM software is the database management system. Against IBM's IMS, Siemens offers Fujitsu's advanced information manager, Aim which is full network Cadasyl database. So far only the Hahn Meitner Institute has adopted it.

Siemens offers mainly Fujitsu peripherals with the 7.800 systems, including a new three-colour display called the 3887 as a partial answer to IBM's four-colour 3279.

The Fujitsu 2808 communications controller, which runs IBM's Network Control Program for SNA networks and is claimed to be 2½ times as fast and offer 1¼ times throughput of IBM's 3705.

French say they will obey EEC rules

SPEAKING at the annual meeting of the French Club de la Péri-Informatique, Jean-Claude Pelissolo of the French industry ministry said his government would adhere strictly to the "free competition" directive on public sector purchasing.

The club, which consists of 30 peripherals, small systems and services companies, had a splendid year in 1979, with aggregate profit up 47% at FF 480 million on turnover up 30.2% at FF 3,007 million.

Of this, 22.6% went for export, an increase of 28.2%.

Swedish government agreement ensures Datasaab's future

ALTHOUGH Sweden's only computer manufacturer, Datasaab, is more than willing to colaborate with European or US partners, the company is not seeking a buyer and its agreement with the Swedish government ensure its future as an independent company.

So says president Gunnar Weddell.

"We did have talks with ICL, but they were terminated with no agreement (CW, April 17). ICL was interested in our banking and display terminals and in our European marketing network, but we could not reach agreement.

"We had talks with Univac earlier about their marketing our banking terminals, but they were not prepared to pay enough money."

Univac ended up adopting banking terminals from Bunker-Ramo, but industry sources say that there is a body of feeling within Univac that this decision was a mistake.

In the last financial year, Datasaab made an overall loss of SKr 208 million (£21 million) on turnover Kr 873 million (£88 million). For the current year it is forecasting a lower loss, about SKr 135 million on turnover of SKr 1,111 million (£112 million). Another loss is forecast for 1981 and the company hopes to break even in 1982.

Reason for Datasaab's loss-making status since its formation in 1978 with the Swedish government having 50% of the shares and Saab-Scania the rest, is that the programme established at that time called for substantial investment in developing its lines.

Over a four-year-period, Datasaab will get a grant of SKr 430 million, but the accumulated losses up to April this year have already absorbed SKr 511 million.

Datasaab now estimates that it will overshoot the SKr 430 million target by about 30% and on June 10, the Swedish Riksdag (Parliament) voted the company the money it needed to balance its books. It has the additional security that if Saab-Scania wishes to sell its shares, it must offer them first to the Swedish industry ministry.

The company's products consist of banking terminal systems and small business computers both built around versions of the same bit-slice minicomputer; Alfaskop VDUs and cluster display terminals; air traffic control systems and clinical systems for use in hospitals.

In the UK, Datasaab has about 125 D15 business systems installed, and about 30 of the Series 18 successor product on order. Five building societies use its banking terminals.

In Finland, Datasaab products are marketed by Datasaab-Valmet, in which Datasaab has a 25% stake. This company does annual business with the Soviet Union worth between £1 million and £2 million.

Why university picked Amdahl instead of IBM

IBM has lost out to Amdahl at another university. The customer this time is Leiden University in the Netherlands which has installed an Amdahl 470 V/7B in preference to an IBM 3033N. The V/7B will replace one of Leiden's two IBM 370/158s and will substantially increase the computing power available to departments throughout the university.

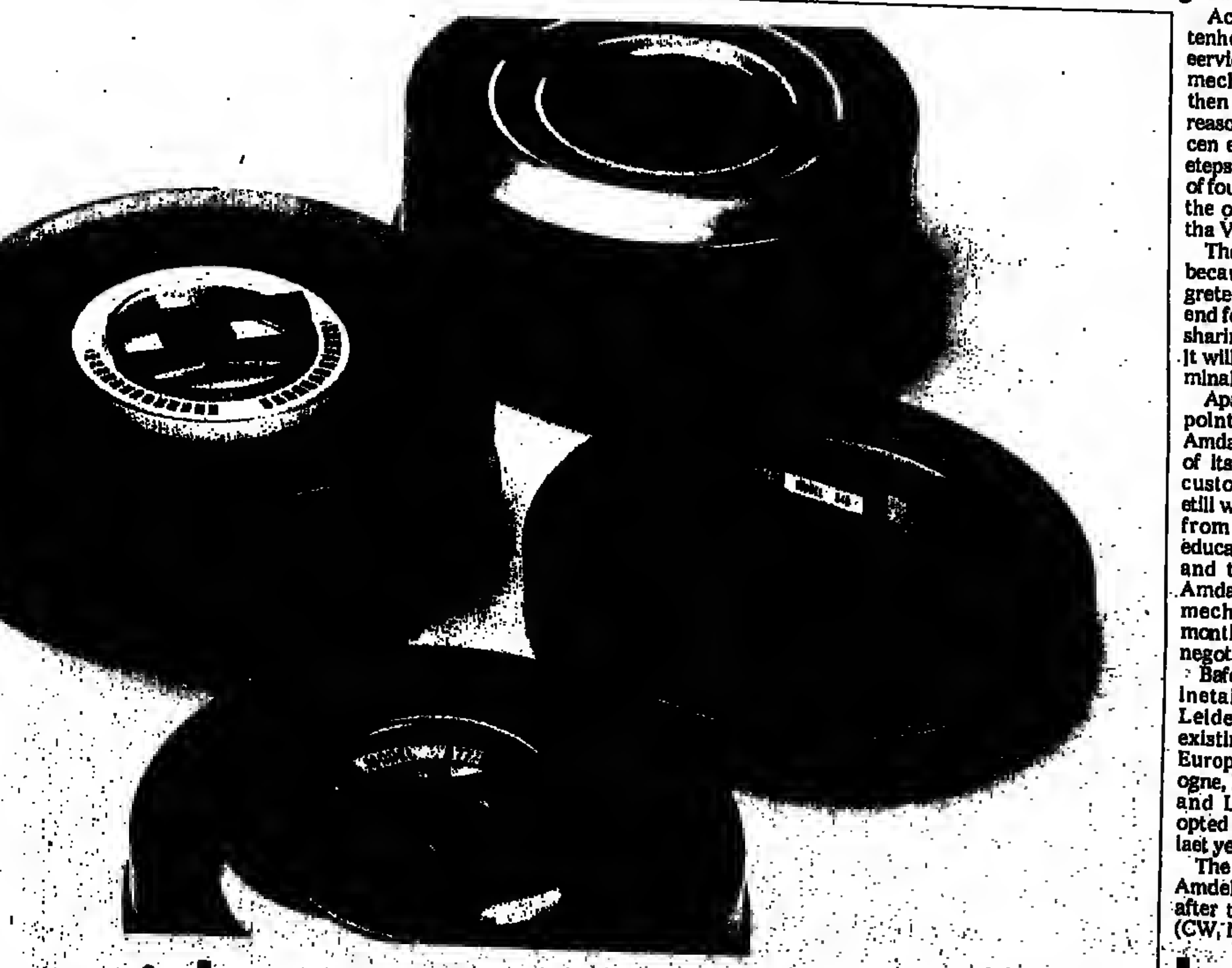
According to Rudolph Siegtenhorst, director of computing services at Leiden, the Amdahl machine was more attractive than IBMs for several important reasons including the fact that it can easily be upgraded in small steps. The V/7B is the smallest of four field upgradeable models, the other three being the V/7A, the V/7 and the V/8.

The V/7B was preferred also because it has far fewer integrated circuits than the 3033N and for its effectiveness in a time sharing environment. At Leiden it will be supporting 70 APL terminals.

Apart from the technical plus points it can offer over IBM, Amdahl also succeeded because of its more flexible attitude to customer contracts. Leiden is still waiting for official approval from the Dutch ministry of education to purchase the V/7B and to get over this problem Amdahl agreed to supply the machine to Leiden on a six-month lease while approval is negotiated.

Before making its decision to install an Amdahl machine, Leiden staff visited some existing Amdahl customers in Europe including Ford at Cologne, BOC Datasolve in London and Leeds University which opted for an Amdahl machine last year (CW, August 2, 1979).

The V/7B was introduced by Amdahl last year immediately after the 3033N launch by IBM (CW, November 8, 1979).



Disk packs from Control Dataset.

Because you can't choose better than the world's biggest brand

The Control Data label on a disk pack reflects its maker's system/drive/head/media total technology capability.

Control Data is the world's largest supplier of scientific and engineering computer systems. The leading supplier of OEM peripherals, particularly of disk drives. The biggest manufacturer of disk packs and cartridges. With large-scale U.K. manufacturing facilities, for full quality control and maximum availability.

For exclusive supplies of CDC and ICL label magnetic media contact Control Dataset. You'll gain the services of Britain's most extensive and experienced sales and technical support force.

You can't choose more wisely than the biggest names in disk packs and cartridges, from the U.K. industry's largest supplier.

Call Control Dataset on 0438 3399 today, or write to Control Dataset Limited, P.O. Box 16, Argyle Way, Stevenage, Herts. SG1 2AB.

CONTROL DATASET

Control Data

India shows West the way in DP training

EDUCATION and training for careers in the computer industry is just as much a need and a problem in India as anywhere else. But while Western companies are all too willing to sit back and complain that somebody else should do something about the problem, Indian companies are refreshingly willing to go out and do something about it themselves.

Tata Consultancy Services, India's biggest services company is establishing a programming school, and Computronics is preparing to found the Computronics Institute for Computer Science. To be established in New Delhi, it should open its doors in about six months' time if all goes well, taking an initial 40 students and building up to about 100. Courses will run for between six months and two years, and the aim will be to turn out top calibre computer scientists.

"We hope to get some government support once we have got it established," says Computronics managing director Piyush Singhal. "That is the way it always works here. The government is not prepared to back ventures of this kind until they have been proven viable and useful."

An example of this is the Tata Institute for Fundamental Research in Bombay. Founded in the early Fifties by the Tata conglomerate, it is primarily government-funded and has gained a world reputation for excellence.

In the computer field, regarded work has been done there on linguistics and synthesis, and the Institute built its own computer, TIFRAC, between 1956 and 1960. Its indigenous minicomputer, the TDC-12 was developed ... and has since spawned the TDC312 and TDC-316 which are similar to the Digital Equipment PDP-8 and to early models of the PDP-11 family.

INDIAN SCENE

Report by Tim Palmer

THE steamy, dreamy Deep South Indian state of Kerala is as notorious for its overcrowded poverty as it is celebrated for its exceptionally high rate of literacy. While the latter continues, the former is changing as money from the oil-rich gulf states begins to filter back.

A sign of the rebirth of the Kerala economy is the fact that the first commercial computer bureau opened in the state earlier this year — with Indian designed and built kit.

First commercial bureau is based on own country's kit

THE first commercial computer bureau in India's southernmost state, Kerala, opened its doors for business in February.

Kerala is one of the poorest and most populous states in India, and the fact that businessmen believe that they can make a commercial success of a computer services operation there underlines the transformation which is taking place in the Indian computer market.

Another aspect of the transformation is that the bureau is equipped with a new Indian small business computer made by a company with the unlikely-sounding name of Delhi Cloth Mills, DCM.

Best-known for its textiles, DCM's range of activities is comparable in scope to those of the other giant Indian industrial and trading houses like Tata and Birla. It was founded in 1889 and is the fourth biggest conglomerate in India.

It has an annual turnover of some 550 crores of Rupees (£310 million) and its interests include sugar, rayon fibre for tyres, foundries, chemicals, oil, fertilisers, breweries, sewing machines, refrigerators, fans and oil.

DCM has had a licence to develop and manufacture minicomputers for about eight years (CW, July 11, 1974) and design work on the product, called the Galaxy 11, began in 1975. It was launched in 1978 and over 40 have been sold.

It is a 16-bit TTL processor, apparently not microprocessor based. It comes with up to 64K-bytes of main memory, up to eight Memorex floppy disc drives, up to 16 locally-built VDUs and two disc drives will be supported.

DCM plans to offer 35 and 70 megabyte drives. The printer runs at 750 lpm, and is assembled by DCM from Centronics mechanisms.

DCM does use the Intel 8080 microprocessor in other products. These include a Spectrum line of microcomputers and a data entry system called Datan 3, which is an off-line key-to-floppy disc data entry and verification station.

Both the Datan 3 and the Galaxy 11 use a large-character strip display for operator guidance.

Most Indian cities have a major road named after Mahatma Gandhi; despite the intention to honour the great man, every Indian invariably calls it MG Road, and the inhabitants of Ernakulam, the business centre of the southern port of Cochin are no exception.

Kerala's first computer bureau Cams, Computerised Accounting and Management Services, is on MG Road and Paliath Surendran is the managing director.

"My background is that of a cost and works accountant," he says. "I worked for a government undertaking, Travancore Ltd and my only contact with a computer there was as a user." Needless to say it was an IBM 1401, which are ubiquitous in Indian to this day.

"I have had it in mind to start a computer services company for about 10 years. Cams is a private company with 35 shareholders, and seven employees at present. Our shareholders include five chartered accountants and cost accountants and I am quite confident that we will be successful.

"The Galaxy 11 cost £27,000, and the three Datan 3 data entry systems cost £3,400 each. We have to do about £2,800 of business a month to break even, but we have signed our first two customers already.

"We did not really have much choice of computer. We were limited to microcomputers from Hindustan Computers or ECIL, or the DCM mini. Hindustan Computers builds a business system around the Rockwell PPS-8 microprocessor (CW, February 7) and ECIL builds an 8080-based microcomputer and the TDC-316 and TDC-312 minicomputers.

Hindustan Computers was a company formed by former employees of DCM, and was initially backed by the Utter Pradesh State Electronics Development Corp as a "join sector" company, but has since severed its ties and is now wholly private. ECIL, Electronics Corporation of India Ltd is a public sector company based in Hyderabad.

"We wanted to buy from a private company, because we expected to get better service."

Despite the fact that Cams has the first Galaxy 11 in Cochin, DCM is stationing a service engineer in the city and opening an office.

"We will primarily be serving customers in the Cochin-Ernakulam area, but we will seek business within a 40 to 50 mile radius," says Surendran.

"Customers will send their work to us by train using their own messengers, and we will return it to them using our messengers to give them the fastest possible turn-round time."

As our picture shows, Delhi Cloth Mills is much better known for its textiles than for computers. As well as building the Galaxy 11 mini and the Intel 8080-based data entry systems and microcomputers, it has also taken on the agency for Hitachi M and L-series mainframes.

IBM trained man leads in technical expertise

Radhakrishnan

THE technical expertise at Computerised Accounting and Management Services resides with Ambat Radhakrishnan.

"I was trained by IBM 15 years ago," he says. "I spent seven years with Electronics Corporation of India, and have experience on both IBM 1401 and the ECIL TDC machines. I worked at the Cochin shipyard, which has a 1401 and a TDC-312." The TDC-312 is a third generation mini developed in India and similar to the 12-bit Digital Equipment PDP-8.

"Our first two customers are a bank wanting an inter-branch reconciliation system, which will take us about one month to write, and a firm of tea auctioneers which wants an invoicing system.

"We will write all our own applications software according to what our customers want. DCM is helping us with programming and development work. The operating system, one language and utilities come with the computer, but there is no application software.

"The machine operates in both interactive and batch mode, but we shall be using it interactively. The only language at present available is RPG-II, but a version of Basic called G-Basic will be available shortly."

HAMILTON USED EQUIPMENT

CLEARANCE SALE OF EX-RENTAL EQUIPMENT

SAVE 20% TO 40%

ON CURRENT LIST PRICES WHILE STOCKS LAST.

	CURRENT LIST PRICE	EX-RENTAL SALE PRICE
DIGITAL		
LA36 DECWRITER II	1190	890
LS120 DECWRITER III	1695	1270
PDP11/VO3	6946	4167
TEXAS INSTRUMENTS		
733 ASR	2250	1575
HEWLETT-PACKARD		
9815A	2246	1460
9825A 16Kb	4166	3330
9825A 24Kb	4663	3730

- All equipment regularly maintained
- Thorough inspection prior to delivery
- Prices include full 30 day on-site warranty
- Maintenance contracts available
- Immediate delivery from stock

Ring 01-450 8900 Now

HAMILTON USED EQUIPMENT

A division of Hamilton Rentals Limited Station House Neasden Lane London NW10 1PH

KEITH JONES TALKS TO TWO LEADING AS CUSTOMERS ABOUT THE AFTERMATH OF THE ITEL COLLAPSE

Why National users are now taking an independent line

Press reports last year about Itel's spectacular financial collapse and hurried exit from the computer business may well have given the impression that users of Itel Advanced Systems were in real trouble — that they had been left in the lurch with no support for their IBM compatible systems.

The reality was a lot different. Most of the Itel support staff stayed on and it appears that most AS users hardly noticed the difference last September when National Semiconductor took over Itel's AS sales and support operation and set up a wholly-owned subsidiary, National Advanced Systems, to run the business. In fact, many users were pleased that the firm that had built their machines had started to support them directly.

Keith Jones talked to two leading AS users, Brian Crowe of insurance brokers Frizzell, and Donald Stott, data processing manager of the Co-operative Insurance Society. The latter was the first UK organisation to install one of the large-scale IBM compatible machines built in Japan by Hitachi and now sold by National as the AS/7000.

Donald Stott was the first chairman of the AS user group, originally called the Itel Computer Users' Association, which was renamed the Independent Computer Users' Association after the National takeover and Brian Crowe, its current chairman, explains here the aims and activities of the ICUA and why the name "Independent" was chosen.

BRIAN CROWE and Donald Stott are two of the leading lights in the small but growing Independent Computer Users' Association, the group that represents the interests of users of the IBM compatible Advanced System mainframes sold by National Advanced Systems.

National Advanced Systems is the wholly-owned subsidiary of National Semiconductor and took over the marketing of the Advanced System range — including the big machines built in Japan by Hitachi — last year from Itel after Itel had run into dire financial straits.

Discussing the subject of National's sales performance with Advanced System machines since it took over from Itel, Brian Crowe of insurance broker Frizzell, pointed out, "As a user group we ask National from time to time about their UK orders to see how they are doing and to make sure they are not going out of business. Sales have picked up here since the days of the Itel crash, but National's AS business in the UK is still slow compared with other countries in Europe."

More reassuring, Donald Stott said that the investment analysts of his own company, the Co-operative Insurance Society, had looked at Itel at the time that the Society bought its Hitachi machine from Itel, and at National after it took over Itel's AS marketing operation. According to Stott their report on National inspired more confidence than what they had said about Itel.

Stott remarked, "The National chairman, Charlie Sporck, gave me the impression when I met him that National is a sober company that is not going to do anything rash."

The smaller AS machines, which are built by National itself and which were renamed the AS/3000 and AS/5000 earlier this year, are regarded now as being somewhat behind the IBM 4300 series in technology and also behind some other plug compatible machines like the Magnuson M80 family and the machines built by IPL.

The view of both Crowe and Stott was that the technology inside the box was irrelevant as long as it did the work required, although both admitted that technology was significant if it affected the cost of the machine.

Asked how much AS users knew about National's development efforts to catch up on or overtake the 4300 series, Crowe commented, "National is not telling us much about new developments," and he added that it was National's responsibility and National's problem to catch up with IBM. It was not a problem for users because users could always go back to IBM or change to another PCM, plug compatible manufacturer, if National failed.

For the customer primarily interested in expanding his operation National can provide a growth path in the form of the AS/7000 machines built by Hitachi.

Stott, who installed an AS/7000 last year when it was called the Itel AS/6, explained, "Our growth path is to the 7000 DPC and we would like National to be more specific about that growth path." The 7000 DPC is the dual processor version of the AS/7000.

Brian Crowe, data processing manager of the Frizzell group, and chairman of the Independent Computer Users' Group, pictured with his AS/5000. "Sales have picked up here since the days of the Itel crash, but National's AS business in the UK is still slow compared with other countries in Europe," he says.

Following the interview with Crowe and Stott it was reported that the "Lightning" large-scale processor development project had been scrapped by National in the US, so it looks as though National may continue to rely totally on Hitachi as its source of big IBM compatible machines.

It is National's responsibility and National's problem to catch up with IBM. It is not a problem for users, because users could always go back to IBM or change to another PCM if National failed.

National's position in the European market with the Hitachi machines could be affected by the deal signed by Hitachi with Olivetti early this year (CW, January 31). But Stott, as one of just three Hitachi mainframe users in the UK all supported by National, is not worried by the possibility of Olivetti starting to market these machines here actively. "The more PCMs there are the better," he declared. "Olivetti presents another possibility that must be good."

Stott raves about the quality of Hitachi's air cooled machines. "The quality of the Hitachi computers hits you between the eyes. After we installed the AS/6 last year some people from Hitachi in Japan visited us in Manchester and gave us brochures detailing the quality control they employ. The range of temperature testing was fantastic. IBM are not in the same league."

Stott also pointed out that his own conversion job from the non-virtual operating system, MFT, to MVS last year was helped enormously by the fact that MFT can run on an AS/7000 (AS/6) in native mode. MFT could only have run on a 3032 under VM, of which the Co-operative Insurance had no experience, and special software would have been needed to provide the necessary error messages. The software would have been a reworking of some US error message software developed in the US for running MVT on the 3032. IBM UK offered to carry out the reworking for the Co-op Insurance on a PRPQ basis.

According to Stott, the MFT to MVS conversion proceeded very smoothly over about four months, never occupying more than two people and requiring only a little help from National's own systems support staff.

Turning to the role of the Independent Computer Users' Association, the AS user group, Brian Crowe, the current chairman, explained that the name Independent had been substituted for the name Itel after the National takeover partly to keep the same initials but also to enable users of other plug compatible machines to join the group later. He emphasised that the articles of the association did not allow in non-National users at the moment but a link-up with Amdahl users "was one obvious possibility."

As far as geographical intermixing is concerned the ICUA maintains links with Choice, the AS user group in the US, and the Co-operative Insurance Society is a member of both ICUA and Choice. There have also been some informal talks with AS/7000 users in France. But surprisingly there is no counterpart of the ICUA in any Continental country, not even in France or West Germany where there are more AS users than in the UK.

Crowe commented, "We think users on the Continent should get together with each other."

The UK is also the only major European country with an independent country-based IBM user group, the IBM Computer Users' Association. Many ICUA members have belonged to or still belong to the IBM Association and Stott, who was the first chairman of ICUA, was also one of the original members of the IBM group in the early Sixties. He feels that the ICUA these days has the same sort of informal atmosphere that the IBM CUA had then.

Both the Co-op Insurance and Frizzell had to relinquish their IBM CUA membership when they replaced their IBM CPUs with AS machines, and Guide, the IBM-sponsored user group, is even more strict about excluding PCM users. However, some PCM users including National's customers can still belong to the IBM CUA and Guide if they continue to possess one or more IBM CPUs in addition to their PCM machine.

Stott's personal view is that Guide and the IBM CUA should accept the use of an IBM operating system as the qualification for membership whether or not the user runs it on an IBM processor. He pointed out that some IBM CUA members felt strongly that PCM users should be allowed to remain in the IBM association.

Crowe and Stott both emphasise the complete freedom from interference by National that the ICUA enjoys.

Crowe said, "At our meetings we can discuss topics like other manufacturers' plug compatible equipment completely freely," and Stott pointed out that ICUA meetings were never held at National offices but always either a hotel or a user's premises.

Committee meetings of the ICUA are held every few weeks at different locations all over the country and general meetings take place at six-monthly intervals. The last general meeting was on March 18 at the Royal Hotel in London. The formal proceedings included a presentation of six short papers on relevant topics each of which was followed by a free discussion. Subjects included a presentation on conversion to MVS given by one of Stott's staff in Manchester and a paper on microcode from one of National's personnel.

According to Stott, the microcode talk dispelled a lot of mysteries and fears surrounding the subject.

Crowe sees the main value of the ICUA as a forum for meeting people and exchanging views. At the same time the ICUA is engaged in more concrete and specific activities like carrying out a survey of members' views on the standard of customer engineering services provided by National.

It is also producing a directory of all the different types of kit used by members.

On the question of whether users of big IBM machines should wait for the introduction of the forthcoming IBM H-series before purchasing a new system Stott pointed out, "One user I know has paid more rental on a 3032 because he is waiting for the H-series than the total cost of an AS/7000."

At the Co-op Insurance Society IBM these days is a minor supplier, the only remaining IBM kit being the line printers, card I/O equipment, optical mark readers and some terminal controllers. And Stott feels confident that IBM will never "be nasty" on users like the Society by withdrawing hardware maintenance.

According to Stott IBM service personnel are still cooperative even in the case of channel problems.

On the software side Stott does not believe that IBM will destroy its PCM competition by introducing software or firmware that will be impossible to support on a non-IBM machine. He accepts that IBM can introduce new features that may cause trouble for PCMs in the short term, but does not see any permanent obstacles arising.

He remarked, "I cannot see how IBM can knock out the PCMs in the long term with technology."

Donald Stott, data processing manager of the Co-operative Insurance Society. He says that his company's investment analysts' report on National inspired more confidence than what they had said about Itel.

ADVANCED FILE DESIGN—Part 12

by Owen Hanson and Norman Revell

Designing for the online environment

Diagram 1. Typical reliability chain for an online system.

IN Parts 12 and 13 we shall examine some of the practical factors which need to be considered when designing a file system in an online environment.

There are two fundamental design parameters for any online system, 1 the availability and 2 the response time. Thus we may say that a given system has to provide a mean response time of two seconds or less and an availability of 00% for example, in order to be acceptable to its users. These design parameters need to be translated into a design involving the files, programs, terminal equipment and so on, that the system will use.

Though we shall be mainly concerned with the file system, the techniques that will be covered can be extended to other aspects of online system design. In this part we shall concentrate on the availability factor.

What is meant by system availability? The availability of any technological system α is defined by the following ratio of mean time to fail and mean time to repair.

$$\alpha = \frac{MTF}{MTF + MTR}$$

Thus if the mean time to fail of a disc unit were 1,000 hours of use, and the mean time to repair were five hours, the availability of the unit would be

$$\alpha = \frac{1{,}000}{1{,}005} = 0.995 \text{ or } 99.5\%$$

Calculation of the MTF and MTR may be carried out in practice by observation and measurement, though of course if new equipment is being considered it is necessary to obtain figures direct from the manufacturer. This is often easier said than done, since manufacturers are reluctant to reveal these figures.

An important aspect to consider in calculating the MTR is any waiting time spent until an engineer actually arrives on site to repair the equipment. Even if it only takes 10 minutes to change a defective circuit board, if the engineer takes two hours to arrive then the MTR is 2 hours 10 minutes. This illustrates one of the benefits of a resident engineer if the installation is large enough to justify one.

In considering the application of reliability factors to the design of an online system, the old principle that "A chain is only as strong as its weakest link" applies. An online system may be viewed as a chain of subsystems each of which must be working for the total system to function correctly, and the elements in a typical system are shown in Figure 1.

Suppose now that we have a system of just two elements whose availabilities α_1 and α_2 are known, see Figure 2. From the rules of probability the availability of the system $A = \alpha_1 \times \alpha_2$. Thus if each element had an availability of 90% say, then the system availability would be 81%. In order to make the system more reliable it is necessary to duplex the weaker parts of it.

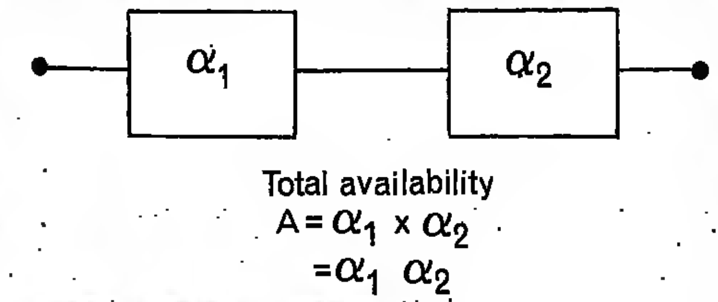


Diagram 2. A series of connection units.

If a duplicate element is provided then the probability of either element not being available is $(1-\alpha)$ and the probability of neither being available is $(1-\alpha)^2$, thus the duplexed availability is $1-(1-\alpha)^2 = \alpha(2-\alpha)$.

For example if we duplex a system element whose availability is 90% then the duplexed availability becomes $0.9(2-0.9) = 0.99$. This is shown in Figure 3 where the normal convention of showing duplicated elements in parallel is illustrated.

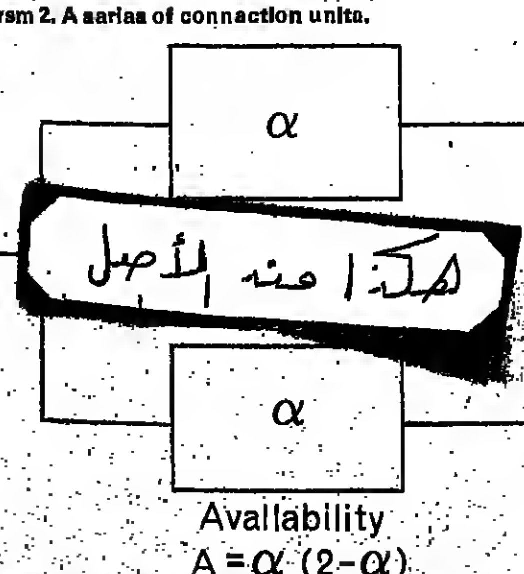


Diagram 3. A parallel (duplexed) connection of units.

As a further illustration, if we were to duplex both elements of the first example the total system availability becomes 98.01%. This is shown in Figure 4.

Using these two basic building blocks of series and parallel connections, the reliability network for complex configurations can be drawn up and total availabilities calculated.

When designing the files subsystem for an online system the same principle applies. For example, suppose we had two banks of four disc drives, and each bank were connected to the CPU via a fully switchable channel and control unit. Further let us suppose that the files to be referenced occupy a whole bank of drives and that the application requires all of these files to be available. Using the availabilities shown in Figure 5 a total disc subsystem availability is derived.

In this example the fourth power of α_D makes the disc bank the weak link of the system. In practice therefore it is important to design the files so that a "graceful degradation" is possible, and not have the rather stringent requirement that all of the disc drives should need to be available for the system to function.

If the master files were spread over the discs in such a way that only part of the system were lost, and it were possible to continue processing after a single disc failure, and also if all the drives were made switchable between both control units, then the system would be much more resilient.

A basic design question which needs to be answered is, "Which element is it best to duplex?" Using the formula previously derived, the improvement in reliability obtained by duplexing is given by $(2-\alpha)$ thus an element whose availability is 90% would improve overall system availability by $(2-0.9)$ or 10% if it were duplexed.

As would be expected the biggest gain is to be derived by duplexing the weakest link, but this is not the complete picture. An important item to consider is cost. When working out the improvements, it is possible to define the "best buy option" by dividing the cost of each element by the percentage improvement in system availability obtained through duplexing.

For example, a disc controller costing £10,000 and having availability of 99% would provide a 1% improvement in system availability at a cost of £10,000, whereas a disc drive having a reliability of 90% at a cost of £3,000, say, would provide an improvement of 10% at a cost percent of £300.

A further factor which should be considered as part of the costing is the degree of redundancy. If the element duplexed is being used perhaps for some other application, then an allowance should be made for this when costing the effect of duplexing.

This same principle can, of course, be applied to triplexing or even quadruplexing vital elements in a configuration, though the benefits are likely to be very marginal for most commercial systems.

For a unit which is triplexed the availability is $1-(1-\alpha)^3$ which for $\alpha = 90\%$ gives an availability of 99.9% (as opposed to 99% for duplexing).

In making a choice of file organisation for an online system reliability theory calculations can be applied to such factors as partitioning of master files, using a separate disc of indices, etc.

A practical point worth noting is that with current technology, disc controllers and channels will normally be very much more reliable than the drive units which have moving parts, and thus should not be a major factor in the design calculations of reliability. In fact for many mini and micro systems these components are integral with the CPU.

Another significant factor to be considered is software reliability — something which is not normally duplexed though the availability factor could be measured in just the same way that hardware reliability is measured.

To summarise, therefore, we have seen how reliability calculations can influence the file hardware configuration and organisation of the files in an online system. There is nothing to prevent the same techniques being used for a batch system where a requirement for high availability exists — it is just that much higher MTRs can normally be tolerated in batch systems. In Part 13 we shall examine how simple queueing theory may be applied to file processing in an online environment.

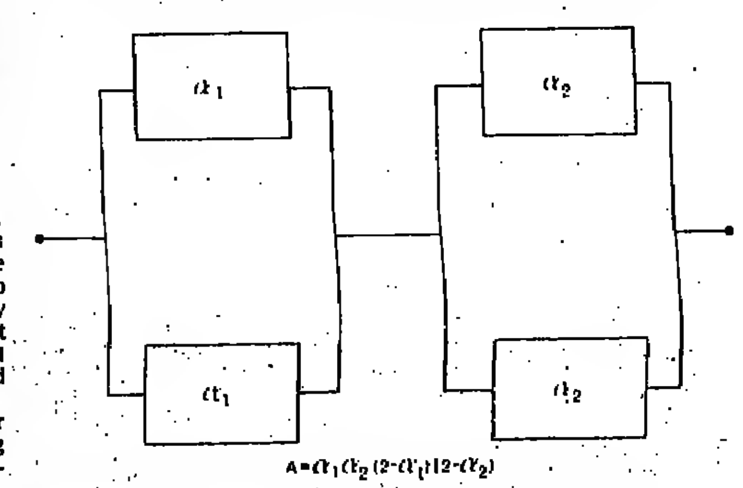


Diagram 4. A system of two elements with duplexing.

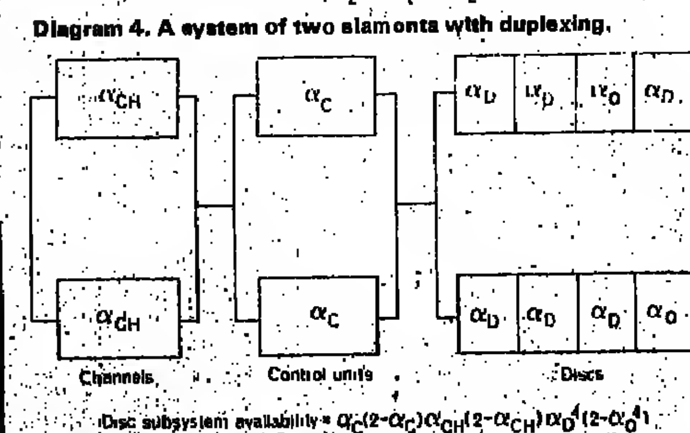


Diagram 5. A typical disc file subsystem.

BASIC FILE DESIGN

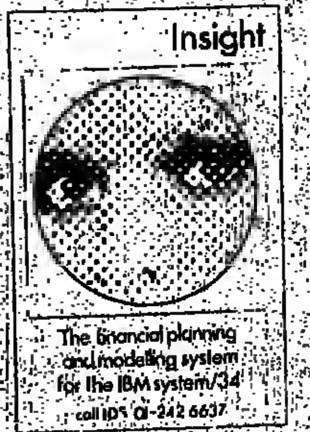
A new impression of Basic File Design is now available, and copies may be ordered from the General Sales Manager, IPC Electrical and Electronic Press Ltd, Dorset House, Stamford Street, London SE1 9LU. Tel: 01-261 8643. Price £1.90 each including postage.

MICROPROCESSORS IN ENGINEERING DESIGN

A largely practical course, introducing the fundamental concepts and techniques necessary to make practical use of microprocessors in engineering applications. 14th-18th July, 1980.

Details from:
The Secretary
Department of Systems & Computing
North East London Polytechnic
Longbridge Road
Dagenham, Essex.
Tele: 01-590 7722
Ext. 2123

To ensure your place telephone by 7th July, 1980.



HOW TO TURN A PROBLEM INTO A CRISIS.

Ignore it.
Hope it will go away.
Tell yourself your Shift Leader isn't really looking for a new job.
That your Data Prep Supervisor's holiday is still months away.
If you're very, very lucky, you'll get away with it.
But if you're not prepared to trust in luck, the sensible thing to do is talk to Knight Computer Services.
We'll help you through a temporary sticky patch by offering you the pick of our temporary staff, from data prep people to operators and programmers.
Or our consultants will help you find a permanent solution to what you thought was going to be a permanent staff problem.
Whatever your problem is, we'll bring our ten years of experience, and the strength of the BOC Group to crack it.
Before it cracks you.
Phone us for a no-commitment discussion of how best we can help you.
Knight Computer Services Ltd.,
14 Old Park Lane, London W1Y 4NL.
Tel: 01-491 4706.

Knight

Pitfalls you may encounter when planning for PoS

By Nicholas Benwell

SHOPPING styles vary considerably from country to country even within Europe; this is especially true for the department store because the style of the store and the location together with the quality of its merchandise are more prone to a national interpretation than a supermarket which mainly stocks groceries.

For example, in the early 1960s the French started to build shopping centres, each with several department stores, in the suburbs of many towns. In West Germany and Holland there has been a trend towards siting new department stores in the centre of towns, either by renovating existing buildings or by acquiring and then clearing central sites.

Another reason for the development of national differences comes about because most retailers tend to operate only in their own country, with the major exception, perhaps, of Carrefour.

The control of department stores tends to be centralised in most European chains although most of the text book computer configurations are to be found installed in somebody's shop.

Other problems that department stores face include how many of one particular item should be stored in a warehouse and how many should be sent straight to a branch; how to optimise picking lists in the various warehouses; and how to minimise mechanical handling within the warehouse and also delivery costs outside. But those are the organisational problems. The collection of purchasing data and its subsequent processing to produce an information flow is just as important.

Given an up-to-date flow of information, which is based on the minute-to-minute data that the computerised terminals at each check-out have generated, the modern shop manager is able to help the buyers to improve their decision making.

In the past and, no doubt, in a few present-day shops the buyers were despots in their individual sections. If they liked something they bought it and if they did not like it no amount of persuasion could change their minds.

No doubt many of them had flair and a talent which could react to all sorts of signals that would soon confuse a computer and so they would end up by beating any machine-based system. But many were not, and those that were highly successful could always leave and start working for a competitor which would immediately cause the original employer a double loss.

Nowadays the competent manager, who has the advantage of a computer based system, would acquire new stock by buying a few of a new line whatever the product, whether furniture or shoes, and then examine the sales data from his tills.

If the response is small he does nothing, but if it is high he orders more before his competitors can respond. He is also able to distribute it geographically if some branches report brisk sales and others sluggish returns.

Allders of Croydon, Surrey is an example of a department store chain which has adopted computers in retailing in order to take advantage of this flow of information. The system is centred on two Digital Equipment PDP 11/70s at the central site at Hackbridge. Each store is linked by leased lines and VDUs.

When the system was designed, various files were established using codes for each item that is stocked.

As the business does not include groceries, Allders had to start from scratch and so established a 12 digit stock keeping unit (SKU)— three digits for the department (eg menswear); two for the category, (eg shirts); six free format (eg Rocola, blue, size 18); and a check digit. About 200,000 SKUs were needed.

The hardware at each store is extensive. The appropriate number of ICL 9500 point of sale terminals are clustered round an ICL 1501 computer which is linked in turn to a PDP 11/03.

The PDP 11/03 was supplied by Gamma Telecommunications and is supported by discs, a communications controller and a printer. It provides each store's link to Hackbridge.

One characteristic of the ICL terminal which impressed Allders was the way that the keyboard controls were lit from within the keyboard itself, and designed so that a light moved from key to key to act as a guide for the operator while the sale was keyed in.

This approach has the advantage that the sales person does not have to look up in order to check what is appearing on the screen.

One of the most controversial points that managers of department stores must decide is which style of sales ticket to adopt. Should the tickets that are attached to each product show the product's price as well as its identification number? Should it contain magnetic coding or OCR? Should existing software be used in processing the ticket details or should it be adapted, perhaps extensively, to fit the style that the department store is used to?

If it is decided not to adapt the software, then the room to manoeuvre in the store design is much reduced.

Thinking of installing a point of sale system? In the third part of his feature on the subject Nicholas Benwell gives guidance on some of the pitfalls to be found when taking the plunge.

Benwell looks at stores who have gone for computerised point of sale systems and concentrates on those who have opted for OCR based systems.

Benwell is a senior lecturer at Cranfield Institute of Technology, near Bedford.

● Our picture shows one of the NCR 280 terminals of the type which Belfast Linen has concentrated on.

At Allders it was decided, after studying the options, that over a five-year period the high cost of magnetic tickets, plus the low cost of magnetic ticket readers was much the same as the low cost of OCR tickets and the high cost of OCR ticket readers. The computer therefore picked the OCR option because it was already producing purchase orders for its goods and could easily change some of the entries on those documents to OCR A fount. By doing this an automatic and accurate data entry procedure based on those documents was established.

Other documents — sets of sales bills, credit card payments — that are involved in the information flow are also currently being investigated from the same point of view.

Belfast Linen, which operates 15 drapery stores in East Anglia, has mixed feelings about its computerised tills. It has bought about 29 NCR 280 retail terminals and each of them gathers wanded information from labels and then records it on a loose cassette which is contained in the terminal. The printer on the till then automatically produces a customer receipt.

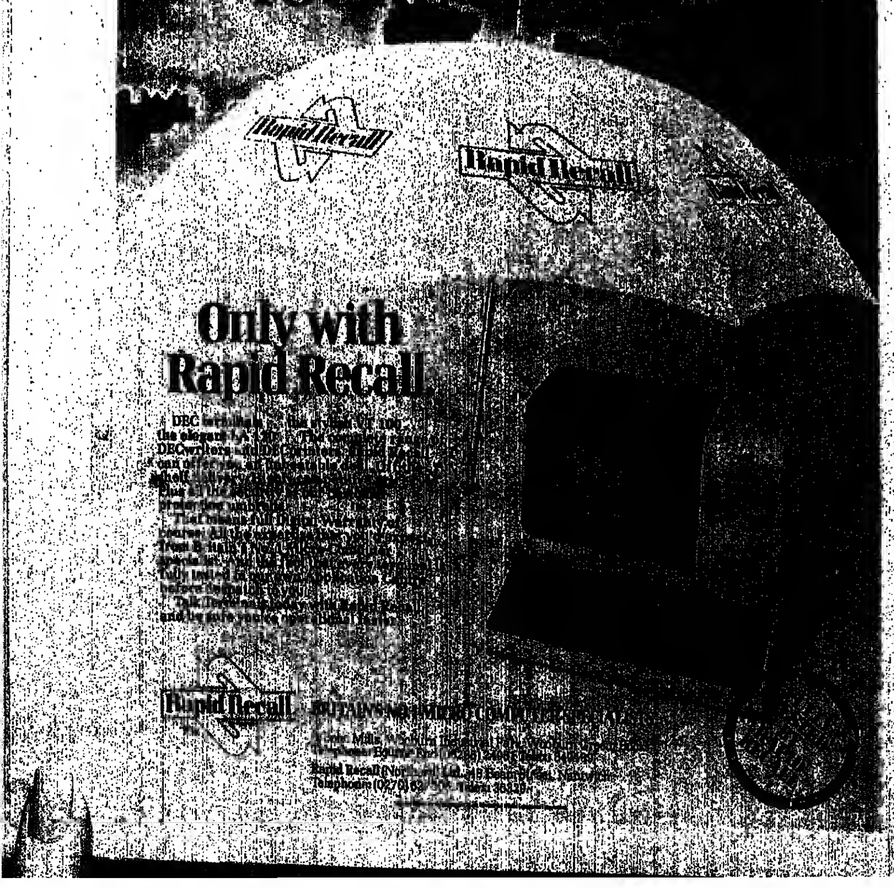
The cassettes are collected regularly by delivery vans (even from the company's only overseas branch at Cannes) and are then played back at the Cambridge headquarters where there is a 48K NCR 8200 operating under B3 and a 32K NCR Century 100.

Here Orbit (order billing information technique) an NCR package, produces general store accounting figures, warehouse reports and monthly stock analysis for each store.

David Cochrane, who is Belfast's secretary, was less than fully enthusiastic about the schema when it was first set up because the software that NCR provided was very weak and a bureau had to be called in at NCR's expense, to sort it out. That resulted in substantial delays.

Also, there are problems in extending the system because the 280 is being phased out by NCR in favour of the 21 which is incompatible with 280-based system.

Nevertheless, Cochrane is eager to extend the system into new shops in places like Oxford, Reading and Bury St Edmunds and that shows that he is still convinced of the benefits to be obtained from a computerised retailing system, even though he has had to endure his share of teething troubles.



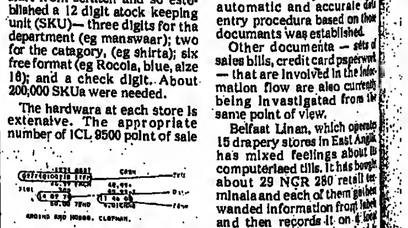


Figure 1. This is a typical receipt from an Allders store showing the 12-digit SKU.

COMPANY NEWS

THE government's dithering and delay over the National Enterprise Board's stakes in Ferranti and Inmos is a disgrace. Uncertainty over what to do about Inmos is understandable, but there was no excuse for the damaging delay in making a clear decision over Ferranti.

Companies usually run into severe financial problems as a result of bad management, but Ferranti's problems in 1976 came as close to being the result of sheer misfortune as is possible; the effect on the property crash on its bankers as much as its own difficulties forced it to seek government aid.

The protracted uncertainty over Ferranti's future was potentially demoralising for management and damaging to its interests. Fortunately the government has belatedly arrived at the right decision,

COMMENT

that the requirement to raise as much money as possible from the sale of the NEB stake should be tempered by consideration of the firm, its workers and outside shareholders.

The original proposal to sell to the highest bidder — be it GEC, Hawker Siddeley or whoever — without giving Ferranti the chance to sink or swim on its own was clearly wrong.

The case of Inmos is less clear-cut but now that the first £25 million has been spent, on balance the commitment of previous government to provide a further £25 million should be met. Inmos does not look a particularly good gamble at present, but then nor are Premium Bonds. Yet taxpayers who put money into that doubtful government bet would surely regard Inmos as a worthwhile national bet.

Plessey turn-about welcomed by City

PLESSEY really does seem to have turned the corner at last and the year-end figures were greeted with delight on the Stock Exchange. One of the high flyers of the 1960s, Plessey's star looked increasingly tarnished as the 1970s wore on, but the company now seems set to regain its high-flying status in the 1980s. Ironically the nadir of its doldrum period appears to have been the time when it sold its big stake in ICL, a move which did not look good at the time.

Muirhead first half spoils the picture

FINAL figures from Plessey, Ferranti and Racal ranged from good to excellent, but Muirhead spoiled the picture with a rotten first half. In the six months to March, profits drained away to £29,000, compared with £931,000 in the same period last year on sales which were 7% up at £11.88 million.

Muirhead is going through the pains of reorganisation and rationalisation, and substantial non-recurring costs are expected to wipe out profit in the second half of the year.

The company is in defance equipment and facsimile machines, some of which are marketed by the National Enterprise Board's Nexos office systems company.

Tyco Laboratories of the US has a 23% stake in Muirhead, and City gossip has blown hot and cold over whether or not it will launch a bid for the rest of the company.

Selling its ICL shares did at least allow it to cut its borrowings and associated interest charges, and some of the money has clearly gone into the necessary activity of selling or closing down loss-making parts of the business.

The results which set the electricals sector of the stock market alight on Thursday and caused the Plessey share price to jump 18 pence to 178 pence were a rise in pre-tax profits of 29.9% to £10.1 million on turnover up 9.7% to £751 million.

The boost in profits was an ironic after-effect of strikes which hit Plessey earlier in its financial year to March 31, 1980. In particular, main exchange deliveries in the last four months of the financial year were a big profit contributor.

In the office, data and control sector of the company's business, sales were up nearly 18% at £123.6 million, and operating profits up 12.8% at £10.2 million.

Aiming for Japan

A JOINTLY owned firm, Computer Associates KK, has been created in Japan by Computer Associates and TSD, a large Tokyn facilities management firm. Present managing director and partner of TSD, Tsutomu Matarzaki, is to head it.

Second source for Mostek devices

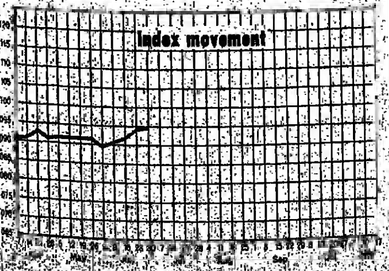
ITALIAN semiconductor manufacturer SGS-ATES is to second source production of two Mostek telecommunications devices, the MK5156 codec and the MK5912 switchad capacitor filter, after developing them to suit the European market.

CW SHARES TABLE

Date 17/6/80 — Index: 84.37 Change: +0.19

Pence	London Stock Exchange		Pence		—	New York Stock Exchange		$	
1980	Stock	Price	+/-pe		1980	Stock		Price	+/-pe
High	Low				High	Low			
405	295	A Comb Tech (25p)	405	+9	19⅞	14⅝	AM International	19⅛	+⅛
67	47½	A Scot Nom (25p)	67		17⅛	12⅜	Amdax	16⅝	+⅛
174½	129	Burroughs (50p)	174½	+2½	84⅜	63¼	Automatic Data Proc	83⅝	+⅜
78	43	Chloride (25p)	78	+3	29⅜	20⅝	Burroughs	29⅛	+⅛
110	94	Chubb (25p)	110		41⅜	34⅜	Computer Sciences	41⅛	+⅛
74	56	Comb Eng Int (25p)	70	-1	27⅜	20⅞	Control Data	26⅜	-⅛
76	60	De La Rue (25p)	76		28⅝	22⅝	Digital Equipment	28⅜	+⅛
560	402	Ever (25p)	560		208½	150	Honey	208½	+½
98	68	Ferranti (25p)	98	+2	36⅝	25⅜	Hewlett-Packard	36⅜	+⅛
1,000	800	GEC (25p)	1,000	+5	370½	297½	Honeywell	370½	+½
1,000	800	Hawker Sid (£1 50)	1,000		370½	297½	Intel	370½	+½
121	112	IBM ($1.25)	1,214	+24	450	416	IBM	450	+1
70	52	ICL (25p)	70		26⅛	19⅜	Memorex	26⅛	+⅛
112	90	Lucas Ind (25p)	112		41⅝	33⅜	Motorola	41⅝	+⅛
205	160	Marconi (25p)	205		76⅛	59⅜	National Semi	76⅛	+⅛
1,000	1,000	Mellenia (£1)	1,000	+5	370½	370½	NCR	370½	+½
1,000	1,000	Muirhead (£1)	1,000	+5	370½	370½	Perkin-Elmer	370½	+½
1,000	1,000	Nexos (£1)	1,000	+5	370½	370½	Rockwell Inter	370½	+½
1,000	1,000	Norcros (£1)	1,000	+5	370½	370½	Schlumberger	370½	+½
1,000	1,000	Plessey (10p)	1,000	+5	370½	370½	Sperry Corp	370½	+½
1,000	1,000	Racal Elec (25p)	1,000	+5	370½	370½	Tandy, Tech	370½	+½
1,000	1,000	Redifon (25p)	1,000	+5	370½	370½	Telex	370½	+½
1,000	1,000	Thorn (£1)	1,000	+5	370½	370½	Texas Instruments	370½	+½
1,000	1,000	Vickers (25p)	1,000	+5	370½	370½	Wang	370½	+½
1,000	1,000	Wilkinson Match (25p)	1,000	+5	370½	370½	Xerox	370½	+½
1,000	1,000	Zarex (£1)	1,000	+5	370½	370½			

The table shows the closing prices in London and New York at the end of last week. The share index is based on the prices of the UK companies in the table.



Revised offer for EMI scanner side

FOLLOWING opposition to their original agreement from the US Justice Department, Thorn-EMI and General Electric have revised the terms of their £18 million deal to transfer the loss-making EMI scanner business to the US electrical giant.

Under the revised agreement, GE will buy the factory in Redlett, Herts and the sales and service operations outside the US.

GE will not now take over the US operations of the business, which include sales, servicing and inventory. The revised price has not been disclosed.

Ferranti now No 2 UK computer firm

FERRANTI announced pre-tax profit up 12% at £11.2 million on turnover up 12% at £215 million last week — and simultaneously surprised its shareholders — among whom is the National Enterprise Board — with a one for one rights issue to raise about £20 million.

Ferranti wants the extra capital in part to fund a £19 million investment programme this year. Involved are new building and plant re-equipment at Cwmbran and Bracknell, and enlargement of its factories at Wythenshawe, Cheadle Heath and Scotland.

The issue is almost certain to take place since the National Enterprise Board has given its assent. The NEB offered most of its 50% holding in Ferranti through a group of stockbrokers on Monday. Buyers must agree to hold the shares for at least two years.

The computer systems division of Ferranti has been creeping up the company's "league" table and now stands at the head, with turnover last year of £81.8 million, 41% ahead of last year, making Ferranti the uneqivocal number two UK computer company behind ICL, with turnover substantially greater than US minimakers like General Automation, Computer Automation, and Modcomp.

PHILIPS

Simply years ahead

Announcing the Philips multi-function P7000.
The one that gets it all together.

You probably need more than one computer function, but you don't need more than one computer system. Now any more.

Now, at a price comparable to systems performing ONE FUNCTION, the P7000 will run * data entry * local file management * transaction processing * batch processing * interactive (central enquiry and update * batch communication * remote job entry, plus * word processing. All this, with up to 24 work stations on a single P7000 system.

What can this mean to you?

Bottom-line savings because you need fewer stations; single-function stations no longer sit idle; users cease to struggle to cross-train on dissimilar equipment; less equipment means lower maintenance costs; less office space.

Optimum flexibility because computer resources keep up with changing demands - hour to hour, shift to shift, month to month; one minute word processing - the next, taking orders and printing out invoices.

Planned growth because additional terminals, memory extension modules and peripherals can be added step by step.

What's more, the P7000 is installed and proven in over 30 UK sites. This is just one of a dynamic range of office machines - and all part of the wider Philips Business Systems' contribution to a whole new world of business knowledge.

PHILIPS Business Systems

I would like to know more about the P7000. Please contact me. ☐
I would also like information on the full range of Philips Business Systems equipment ☐
CW 3/7

Name
Position
Company
Address
Tel. No.

To Mr. Tony Smith, Philips Data Systems (Distributed Processing Group), Bell Street, Maidenhead, Berks SL6 1BU. Tel: Maidenhead (0628) 39131.

marketplace

For Advertising Rates PHONE 01-261 8757

WANTED
New or Used
RM03-AD
disc drive
for PDP-11/70
Ring:
Egham (0784)
37411

Contact Xenia White

PDP-11 LINE PRINTERS
Systime 400 l.p.m
Systime 200 l.p.m.
FOR SALE
CALL EGHAM
(0784) 37411

SK COMPUTER SYSTEMS LTD
DEC SYSTEMS FAST!

- PDP 11 BASED COMPUTER SYSTEMS
- FULL RANGE OF SOFTWARE
- PER CALL OR CONTRACT MAINTENANCE AVAILABLE
- WIDE RANGE OF DEC COMPATIBLES

YORK HOUSE, STEVENAGE ROAD
HITCHIN, HERTFORDSHIRE, SG4 9DY
telephone 0462-31116 telex 825647 Sk Sys
0462 31116
digital systems and compatibles in stock

PDP 11/04 /34 /60 /70
COMPUTER SYSTEMS
COMPETITIVE DELIVERY & PRICES
FAST DEC!
FROM **Systek**
HR House, High Road,
North Finchley, London N12 0AZ
Tel: 01-349 2911 Telex: 28227

IBM 129, 029, 026 PRINTING PUNCHES

- All fully refurbished
- Free warranty
- Guaranteed maintenance
- Various code options available
- Immediate delivery

Also
SORTERS — INTERPRETERS — VERIFIERS
SIDE CABINETS — REPRODUCERS
Tel: 0268 710292. Telex: 99463
C.B.I. COMMERCIAL DATA LTD., Downham Road, Ramsden Heath, Billericay, Essex

---

DEC-LARGE STOCKS OF SURPLUS AND USED EQUIPMENT

RECONDITIONED TERMINALS — FULLY GUARANTEED

TELETYPE ASR33 Automatic Send/Receive Terminal with 84 ASCII character set, 10 cps, paper tape punch and reader, choice of interface (20mA or RS232). £995.00. (pedestal £30.00 extra).

JUST ARRIVED — FURTHER LARGE STOCKS OF HAZELTINE 1000 & 2000 VDUs

H-1000: 12 lines by 80 character display Upper case ASCII, 110/300 baud (higher speeds optional). RS232 interface. NOW ONLY £328.00

H-2000: Superb spec including full XY Cursor Addressing and Edit Facility. 27 x 74 display. Upper case ASCII, RS232 Interface, Switch-selectable baud rates. £395.00

HAZELTINE MODULAR ONE SERIES VDUs Superb microprocessor-controlled terminal with 24 x 80 display detachable keyboard, cursor addressing, wide range of options. BASIC model from £495.00. EDIT model from £595.00.

PDP 11/04-363 processor, 64k 1-Hz chassis, 28K-Word Memory, DLI1W Asynchronous Interface. £4000.00.

PDP 11/40 Processor with 48KW Fully Cct. KT11D Memory Management, DL8 Asynchronous Interface, DEC Cabinet. £3000.00.

RK05-F Double-desk slave dsk drive— £2000.00.

LA-11-PO 180cps DECprinter complete with Unibus Console. £1600.00

LA36 DECwriter I with RS232 Interface and numeric keys £750.00.

MM11-DP 16KW Add-on Core for PDP11/04 and PDP 11/34 Subs. BRAND NEW SURPLUS. £976.00

Electronic Brokers
49/53 Pancras Road London NW1 2QB 01-837 7761
Telex 298694

HEXAGON computer services
FACILITIES MANAGEMENT RECRUITMENT
RECRUITMENT ADVERTISING CONSULTANCY
FACILITIES MANAGEMENT BUSINESS SYSTEMS
SOFTWARE PACKAGES COMPUTER SECURITY
CONTRACT STAFF SUPPORT RECRUITMENT
BUSINESS SYSTEMS SOFTWARE PACKAGES
HEXAGON HOUSE 145 WARDOUR STREET LONDON W1V 3TB ☎ 01-439 3671

WEBSTER D/P SERVICES LTD.
NEW/USED DP EQUIPMENT
BUY OR SELL THROUGH WDP
NEW DE LUXE 80 COLUMN HAND PUNCHES (EX-STOCK)
WDP 01-464 9011
TELEX 896550
WEBSTER D/P SERVICES LTD.
65 WIDMORE ROAD, BROMLEY
KENT BR1 3AA

RING 01-439 6481 for

TEMPORARY STAFF — Effectia Gravis provides staff at all levels to cover a wide range of assignments.
- HOLIDAY COVER
- COVER DURING SICKNESS
- PHASING OUT OLD HARDWARE
- SITE RE-LOCATION
- INTRODUCING NEW HARDWARE
- PEAK LOAD COVER.

OPERATORS, TECHNICAL SUPPORT, DATA PREPARATION STAFF, JCL/MACRO WRITERS, SYSTEMS DEVELOPMENT, MANAGEMENT, FACILITIES MANAGEMENT.

PERMANENT STAFF — Our permanent recruitment section can assist you with vacancies at all levels.
- DATA PREPARATION
- MANAGEMENT
- OPERATORS
- TECHNICAL SUPPORT
- DATA CONTROL
- PROGRAMMERS
- SYSTEM-ANALYSTS
- TRAINEES.

RECRUITMENT ADVERTISING: COPYWRITING, FILE SEARCH.

Top professionals in an established company

EFFECTIA GRAVIS
COMPUTER PERSONNEL CONSULTANTS.
National House, 66 Wardour Street, London W1V 3HP.
Tel 01-439 6481. 24 Hour Answering Service. Lic. No. SE/A162

THE LEADING EXHIBITION OF COMPUTERS, PERIPHERALS AND SYSTEMS

COMPEC '80

in the Grand Hall at
OLYMPIA, LONDON
November 4, 5 & 6, 1980

Sponsored by "Computer Weekly," "Data Processing," "Practical Computing" and "Systems International"

The enormous attendance of over 35,000 visitors at last years event has established Compec as Britains Biggest Computer Exhibition

Ensure your participation in the computer show of the year by posting the coupon below.

STAND RESERVATION FORM
To The Exhibition Manager, Compec 80, 80 Bowling Green Lane, London EC1R 0NE
Please provisionally reserve for us stand space at Compec 80 and send the autoengraved entry details
Name ..... Company .....
Address ..... Tel No. .....

B.B. COMPUTER SUPPLIES LTD.
THE SECOND USER PEOPLE

DISK PACKS	
IBM 3340 Data Modules	£420 each
3340 any other label	£395 each
IBM 3330 11's	£275 each
3330 11's any other label	£150 each
IBM 3330 1's	£75 each
3330 1's any other label	£50 each
EDS 30-60	£39.50 each
2316	£39.50 each
All types of disk cartridges	£19.50 each
Univac 1710 V.I.P. Card Punches	£2,500 each
New ICL System 4 Film Printer Ribbons to clear	£7.50 each

B.B. COMPUTER SUPPLIES LTD.
5 Upper Tooting Road, London, S.W.17
Tel. 01-767 6614

FOR SALE
DEC 11/70 CORE MEMORY
512 K bytes · Dec maintained
Please contact Mark Avery–01 623 6941

Microsystem Manufacturer seeks Systems/Software House Agents.

We have been appointed distributors in the UK to market an advanced and growing range of microcomputer-based systems suitable for business, process control and industrial use.

Our principal is a large American company and a leader in technology. We are now looking for a defined number of systems/software specialists to package software with these systems and supply complete products to the end user. We can offer an attractive agreement to the selected partners.

For a real profit and growth opportunity write a brief description of your company's capabilities and size and send to Box No. 1095.

REACH THE COMPUTER INDUSTRY THE EASY WAY

The most economic and efficient way to reach over 92,000 computer people in this country is by direct advertising. Why not place an ad in the C.W. ls

MARKET PLACE

For details of rates and dates
Ring: Xenia White on 01-261 6253

SURPLUS STOCK

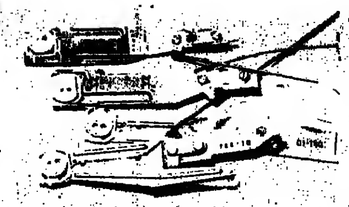
DEC H960 C8 new £890 each
TE16-EJ new £6,000 each
LA36-CJ new £1,300 each
RL02K-DC new £1,15 each
VT100-AB new £1,160 each
TS11-B8 Corp Cab new £8,063

Ring 0462 31281

DATA GENERAL
Printers and visual displays available NOW
We also design systems and programmes in Business Basic
HAMLET COMPUTER GROUP LTD.
Call Chris Everett on
Alton (0420) 83560

BUYING SELLING LEASING?
COMPUTER RESALE BROKERS
CRB House, 33 Church Street, Basingstoke, Hampshire RG21 1QQ
Telephone (0256) 5643L
Telex 858048
CRB
ALLIED COMPANY

WHY SCRAP A DEFECTIVE HEAD??



We can replace your defective magnetic head on an exchange basis.
Please call for further information and brochure.

VAS COMPUTER PARTS & ACCESSORIES LTD.
Tower House, College Road
Bromley, Kent, England
Telephone. 01-464 5895
Telex No. 896559

TRADEPRINT
Confidential manufacturers and suppliers to the trade and independent distributors of the following:
LISTING PAPER (SINGLE & MULTI)
CONTINUOUS BUSINESS FORMS
MULTI PART SETS
CUT SETS
BOOKS AND PADS
CHEQUES AND OCR DOCUMENTS
OVERPRINTING OF EXISTING STATIONERY ETC., ETC
ODD DEPTH FORMS OUR SPECIALITY
Enquiries treated in confidence
TRADEPRINT & STATIONERY CO. LTD.
MORFORD ROAD, ALDRIDGE
WALSALL WS9 8TF
Telephone 0922 53862

IBM 029 AND 129 PRINTING PUNCHES
Fully refurbished with maintenance contracts
Tel: (02774) 55881/3
Input Output Data Processing Ltd.

WANTED
REDIFON KEY TO DISK EQUIPMENT
Phone: 0225 705957

Computers Bought and Sold
E O B LIMITED
Tel: 0783-44777
Telex: 537783

Qume CIFER
DEC LA34
DEC VT100
Rahan Computing

Nelson Computer Services Ltd.
ST. JOHN'S COURT, BACUP ROAD, RAWTENSTALL, LANCS BB4 7PA
new, refurbished and second user equipment

IBM 029 026 129 Card Punches	Decwriters
IBM 2741/42 Selectric Typewriters	Teletypes
UNIVAC 1701/1710 VIP/VIP	Printers
BURROUGHS TC 500 TC 700	Tapedrives
BURROUGHS TC 512/520 Card P/U	Disk Storage
KODE Paper Tape Equipment	Pre Sales
Teletype ASR 33	Power Supplies
Card Punches	VDUs
Line Printers	VDU Terminals
Serial Printers	VDU Disks

PURCHASE — SELL — LEASE — RENT — MAINTAIN

CASH IN
Contact: Mike Bowles
01-558 2131
Leyton Waste Paper Co. Ltd.

DATA PREPARATION
Key to 3742 diskette. Free local collection and delivery. Very competitive rates.
Contact: Michael Moore
Wood Green (Hastings) Ltd.
0424 446822

WANTED
EMM memory 3650/40 128K for spare parts.
Reg. P.O.B. 11
A1197 Wien, Austria

WANTED
To purchase, all used IBM, ICL computers
J. & M. COMPUTERS
The Stables, Plains Road
Great Totham, Essex
Tel. Maldon (0621) 892333

FOR SALE
IBM 029 card punches, Data Dynamics 309, ASR terminals and Teletype 33 terminals.
A Quantity of ICL equipment will also be available in July, including a 1833 printer, EDS 8 disk drives and controllers, etc.
Please contact: R. J. Potter, Oxford Petty Limited, Oxford. For further details Tel. Oxford 64777 Ext. 422.

FOR SALE
1901T 32K
Plus
2x50560, 4x2508 9 track MTs, 1/1600 Train Printer, Fast Handled Drums, Also 1x2102 300 CPM card reader.
1x48 EVA Meter Alternator, 1 Pool of Wheaton Unit and Air Conditioner. Plus existing inv. 2 Bytronics Air handling units. Compressors and 1 Decard Panel.
All equipment available from early July. We will sell items individually.
Contact: W. Perry or D. Howells at Hamlet Computer Group Ltd. Alton (0420) 83560. Hamlet 40281. Telex 851-858116. Tel: 01-200 1167 or 01-903 1176.

FOR SALE
IBM 029 card punches, Data Dynamics 309, ASR terminals and Teletype 33 terminals.
A Quantity of ICL equipment will also be available in July, including a 1833 printer, EDS 8 disk drives and controllers, etc.
Please contact: R. J. Potter, Oxford Petty Limited, Oxford. For further details Tel. Oxford 64777 Ext. 422.

FOR SALE
Available Immediately
Data General Eclipse S/20G, 16Kx 16 bits
2 x 2.5 MByte Diablo disk drives
2 x 9 track 800 BPI and patch 63 BPS
Communications adaptment for 24 lines
2 x 9 track Magnetic Tape Drives
Offers around £18,000
Centaur Scientific Software
Cambridge (0223) 65373

Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

Appointments
Appointments

COMPUTER WEEKLY

Classified Department, Dorset House, Stamford St, London SE1 9LU

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address.

Classified Rates: £10 per scm.
18 x 3 cols = £616. 39 x 3 cols = £1,375.
Half Page (19 x 7 cols) = £1,430.
39 x 4 cols = £1,875.
Full Page (39 x 7) cols = £2,650.

Copy Deadline: 3.30 pm Monday prior Thursday publication date. Complete artwork up to 11 am Tuesday. Advanced space reservation is advisable.

LONDON
Assistant Classified Manager
Chris Prior 01-261 8092
Ken Watford 01-261 8057
Ian Faux 01-261 8019
Neil McDonnell 01-261 8024
Denise Smith 01-261 8454
Julie Hannaford 01-261 8902
Kevin McOwan 01-261 8918

MANCHESTER / GLASGOW
Owen Kelly 061-872 5861
Geoff Aikon 061-872 8861

BIRMINGHAM / BRISTOL
Vic Shorel 021-356 4838

Knight

Contracts for Analysts and Programmers

IBM 8100 DMS experienced Analyst Programmers for 6-month contracts, on new development projects, commencing August onwards.	C. LONDON
IBM Series 1 Programmers to start next month on interesting 6-month contract.	LONDON
IBM DOS/VS COBOL + CICS programming.	HOLLAND
IBM Sound PL/1 combined with IMS experience at Analyst/Programmer level would ensure a 6-month contract sterling A.S.A.P.	S. COAST
IBM Series 1 EOX Analyst Programmer.	CAMBS.
IBM COBOL + IMS/DB/DC programming experience, for various contracts throughout the South.	LONDON + H. COUNTIES
HONEYWELL L68 COBOL + TDS + IOS Analyst and Programmers to work on long-term development contracts.	SURREY
HONEYWELL L68 COBOL Programmer.	HOLLAND
HONEYWELL L62 COBOL + DPS 4 programmers for batch + on-line development project commencing July for several months.	BERKSHIRE + C. LONDON
BURROUGHS B824 CMS COBOL Programmer with on-line experience.	WILTS.
ICL 1900/2900 experienced team of analysts and programmers for on-line development project.	S. AFRICA

Please call Richard, Denise or Colin for more information.

Perm / Contract Vacancies for Operators

TRAINEE DATA CONTROL — CROYDON
Opportunities exist for A Level School-leavers to enter the computer industry. Excellent promotion prospects within company for the right people.
SALARY: £3,500 p.a.

CONTROL CENTRE OPERATORS — BRENTFORD
Junior and Senior vacancies exist in young expanding company for School-leavers, and those with an operations background. Interesting work involving co-ordination, organisation and telephone work.
SALARY: £3,500 p.a.

ALWAYS RELY ON KNIGHTS
Rachel Martin is here to give you details on the above and other vacancies (or advice on career prospects).

CONTRACTS
Honeywell is high on the market this week!
GCOS and OS2000 in Europe and Ireland.
Please call Sue Smyth now!

PDP RSTS/E OPERATORS — BERKS.
High level operations job. Days only. Call Joanne or Sue.

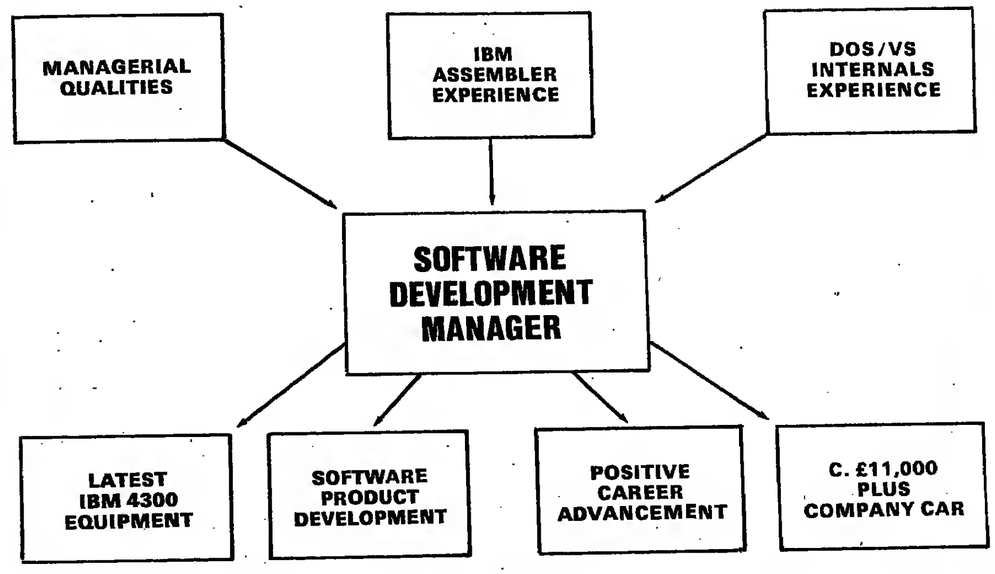
PIPELINE JOBS!
Professional contractors, 3 years' experience. Call Joanne or Sue now!

Knight

Knight Computer Services Ltd.,

01-491 4706
OR WHEN BUSY 01-439 3411

MYRIAD



Our Client is based North-West of London and offers excellent conditions of employment including generous relocation expenses where appropriate. Applicants seeking further information should telephone or write, quoting reference S2/0307.

IBM DISTRIBUTED PROCESSING NETWORKS BASED CENTRAL LONDON WITH TRAVEL TO

MILAN · PARIS · STAVANGER · DUBAI RIYADH · ATHENS · OSLO · SUMATRA

Three computer professionals, with at least two years' relevant experience, are required for the development and implementation of a variety of challenging applications using a network of IBM 5280s and/or System 34s which will communicate with the Head Office 4300.

Experience using IBM minis will be a significant advantage and the successful applicants can look forward to different levels of overseas travel.

Each position requires a mix of skills including technical, project control, implementation and support. Training will be given where necessary.

£8,000-£12,000
SUBSTANTIAL BENEFITS

SYSTEMS IMPLEMENTOR

ANALYST/ PROGRAMMER RPG II

SENIOR PROGRAMMER RPG II

Our client plays a major role in oil exploration throughout the world, and, in maintaining its leading position, uses the latest decentralised computer technology to support its management and administrative functions. As the Company continues to expand, the persons appointed can anticipate exceptional career opportunities coupled with equal financial rewards.

The offices in Central London are within one mile of four British Rail main-line stations. Season ticket loans are provided and additional benefits include a FREE PENSION SCHEME, FREE LIFE ASSURANCE, FLEXTIME and LVs.

REF. S1/0307

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street, London, EC4Y 1AA. Telephone 01-353 0981 24 hours

If you're on form... ...fill in this one.

If you're performing really well in your present job, you'll be keeping your eyes open for something better.

But being a top performer, you've got better things to do with your time than pore over pages of job ads and make dozens of phone calls.

So to save time, and to get yourself lined up for some of the best jobs going, just fill in our application form.

We'll then get back to you fast with details of jobs that are exactly right for you.

Personal Please write in ballpoint, using block capitals.

Surname________ Forenames________ Mr/Ms (delete)

Address ________

Tel. Home______ Office (discretion will be used)______

Age____ Nationality______ Car?____

Are you prepared to relocate in UK?☐ Abroad?☐ (tick box)

Experience Place no. of years in box, e.g. IBM 360/370 [4]

Machines: Please specify model.
IBM 360/370 ☐
IBM others (specify) ☐
ICL 1900/2900 ☐
ICL others (specify) ☐
Honeywell ☐
Univac ☐
Burroughs ☐
PDP ☐
Other mainframes ☐
Other mini-computers (specify) ☐

Applications
Commercial ☐
Financial ☐
Payroll ☐
Production control ☐
Stock control ☐
Scientific ☐
Realtime ☐
Software ☐
Database ☐
Message switching ☐
Communications ☐
Data transmission ☐
Control process ☐
Teleprocessing ☐
MIS*/CPA*/PERT* ☐
Magnetic tape ☐
Disk ☐
Others (specify) ☐

Languages
Cobol ☐
Plan ☐
Assembler ☐
PL/1 ☐
Fortran ☐
Filetab ☐
RPG II ☐
Auto*/easy*/user code* ☐
Others (specify) ☐

Job Titles
Project leader ☐
Systems analyst ☐
Systems engineer ☐
Analyst/programmer ☐
Systems programmer ☐
Programmer ☐
Operations supervisor ☐
Operator ☐
Consultant ☐
Sales representative ☐
Others (specify) ☐

Operating Systems
DOS ☐
OS ☐
George (specify) ☐
CICS*/HASP*/GRASP* ☐
DBOMP*/MVT*/IMS* ☐
CMS* ☐
Others (specify) ☐

Position Sought
Please state briefly the type of appointment you are seeking.

Contract?☐ Permanent?☐ Either?☐ (tick box)

Minimum salary £____ Notice required/Date available____

Signed______ Date______

Cut out the whole advertisement and post to the address below.

Knight Computer Services Ltd.,

01-491 4706

REAL TIME

UP TO £12,500+

DEC RSX11 or IAS Experience

Digital Applications International requires analyst/programmers and senior staff, to design and implement process automation systems.

Vacancies exist at our three offices for projects in the U.K. and abroad.

For more details and application form,

Please contact:

Kristin Jew, DAI Limited, Axtell House, 24 Warwick Street, London, W1R 5RB.	Patricia Howill, DAI Limited, Alpha House, Rowlands Way, Wythenshawe, Manchester M22 5RG.	Ray Stedman, DAI GmbH, Herzogstr. 61, 6078 Neu Isenburg, Nr Frankfurt, West Germany
Tel: 01-734 5486	Tel. 061 432 3122	Tel 06102-38071

(1808)

DAI

Targa

OPERATIONS

IBM OS OPERATORS c £6,500
Experienced operators required for sites in London. Good OS/VSI or MVS essential.

IBM DOS OPERATORS c£6,500
18 months' plus experience for GOOD DOS/VS operators in and around London.

IBM MVS JCL WRITER c£6,500
A vacancy exists South of London for a JCL technician who is an expert in MVS.

BURROUGHS £4,000 to £5,000
Six to twelve months' experience will help you to secure a new job in either Central London or Mid-Kent.

ICL £4,000 to £6,000
If you have between twelve to eighteen months' experience and wish to work in London or the Home Counties, then we have vacancies that will interest you.

HONEYWELL GCOS To £5,800
Vacancies at several Home County sites for OPs with 12 months experience.

HONEYWELL OS2000 c£6,000
Good OS2000 Ops with JCL experience required for Middlesex/London sites.

PDP/MINI to £6,000
Several operator vacancies for sites in London. 6 months' experience + required.

PROGRAMMERS

SURREY	ANAL/PROG	6 mths.	HP3000	£6,000+
ESSEX	DP MGR	SYS 64	RPG11	£NEG
LONDON	PROG	2 yrs.	NEAT 3	£NEG
LONDON/ESSEX	PROG/ANAL	2 yrs.	ICL	£NEG
LONDON	PROG	3 yrs.	BURR	c£8,000
ESSEX	PROG	2 yrs.	UNIVAC	c£7,500

TARGA COMPUTER SERVICES
46/47 LONDON WALL, LONDON EC2M 5TE 01-638 6381

DOS/VSE Technical Support

France 23,000 p.a.

We are currently assisting a multi-national company in the transition from non-IBM kit to a network of 4300's. As each of the 3 French installations take delivery of their machine, they will require several months of on-site technical consultancy. This role is a wide-ranging one and will include providing technical advice, backing and support, undertaking trouble-shooting duties when necessary, plus liaising with the central project team who are converting each installation's systems to run on the 4300's. To apply for this position you should have in-depth knowledge of DOS/VS – previous VSE experience is not essential. Knowledge of French will be a definite advantage, and you will be expected to achieve reasonable fluency in the first 2–3 months of this one year assignment.

For further details, please telephone or write to Brian Gldston at our UK offices, or call during evenings/weekends on 03446 5385.

cds **The European 370 Specialists**

67-73 Park Street, Camberley, Surrey GU15 3PE. Tel. 0276 26845. Telex 858052.

(1796)

PROGRAMMERS ANALYST PROGRAMMERS/ PROJECT LEADERS

£9,000 **WEST MIDLANDS**

Company cars — minicomputer projects — pension plus sickness scheme—six weeks' holiday—service awards.

We are seeking self motivated professional staff to join an expanding minicomputer turnkey systems house. All levels of staff, from programmers to analyst and project leaders, are required, offering career advancement in a short time scale. You would work on minicomputer development projects, in a team environment, using real-time equipment.

Experience of minicomputers, RSTS or BASIC + would be very valuable, but not essential.

For a confidential discussion, contact Mike Heselen, ref CW278.

CPC

COMPUTER PERSONNEL CONSULTANTS
18th Floor, The Rotunda
Birmingham B2 4PA
021-632 6848

(1844)

Grow Britain's Computer Industry...

As an Area Sales Manager with Allied Business Systems Ltd.,

ABS is rapidly expanding its sales force. We need top Sales Managers to set up and lead sales teams in London, Birmingham and Manchester. These teams will be directly supported by the men and women who design and manufacture our systems, which are currently setting high standards in the dataprocessing industry.

The rewards will be to play a major role in consolidating this wholly British computer company's leading position in the huge business systems market, (when you hear about our new management and their plans, you will understand why we are so confident); remuneration befitting the successful execution of this task, a top guaranteed salary and the benefits associated with a major British Public Company.

If you think you are the person for the job, phone us now on 04862-70516 to arrange an informal interview. These are soon to be held in Manchester, Birmingham and London.

ALLIED BUSINESS SYSTEMS LIMITED
Mulberia House, Station Approach, Woking, Surrey GU22 7UZ

JBA

REAL-TIME SYSTEMS

Berkshire

Our Client, a market leader in real-time industrial systems, has a number of opportunities for staff at various levels to join their project teams currently developing sophisticated mini/micro-based control applications.

Programmers

c. £7,500

Applicants should have two years experience in technical, process control or industrial systems using high-level languages, such as CORAL, RTL/2, FORTRAN, etc. A background in DEC equipment with RSX11 or RT11 would be a distinct asset, but training will be given where appropriate. Vacancies are also available for programmers with Assembler/Micro experience.

Analyst/Programmers

c. £8,500

All candidates for these positions must have programming experience and been involved in the design of technical real-time systems for a total of four years. Knowledge of current micro's used in control systems would be advantageous. **Contact: Jim Baker**

Project Support Managers

North Surrey **c. £12,000**

Our client is a market leader in the production of micro-based process control systems for engineering manufacturers, having been established as a specialist company in this field for the past 3 years.

Two senior opportunities have now been created for individuals with a number of years experience in the process and production control business, combined with a thorough technical understanding of how micros are used in such systems and extensive client/user contact. Needless to say, past project experience will be carefully examined.

If you fit the above description, call for more details – both the job and the company will then be described in full. **Contact: Andy Wright**

Sales Executive

London **c. £11,000 package**

A leading British manufacturer wishes to appoint a Sales Executive to take responsibility for a territory in London selling small business computers and key-in-disk systems.

Applicants must have a proven sales record but this need not necessary be in d.p. Experience in office machines, technical equipment, etc would be considered.

Enthusiasm, drive and the ability to close sales is of prime importance.

Contact: Jim Baker

Systems Analyst

Surrey **to £10,000**

The turnkey division of this large organisation is continuing to expand rapidly and is therefore seeking a senior systems designer to assist and advise clients on their various requirements.

Applicants will already have experience in a software house environment using various mini-computers and preferably have a programming background. Ability in communicate at all levels is essential as is the initiative to work alone in the field.

A relocation package is available to the exceptional applicant. **Contact: Brian Postles**

Product Support Analysts

Berks **£7,000 – £10,000**

This well established software company, who specialise in computer performance monitoring packages and are market leaders in their field, require support analysts with proven systems programming ability.

Ideally candidates will have gained experience using assembler in a MVS or VME/B environment but a good mini systems background could be equally valuable.

Applicants must be prepared to travel within Europe and U.K. to user sites and be capable of liaising with clients in technical situations.

An excellent benefits package complements the basic salary. **Contact: Brian Postles**

COBOL/Minis/Development

London/City **neg. to £8,500**

We have been retained by a leading Consultancy and Systems House to assist in the search for good COBOL Programmers with at least 18 months commercial applications experience on any machine. The successful candidates will participate in various new projects in addition to being introduced to a minicomputer system. The company have complete and immediate access to sophisticated Hewlett-Packard hardware and software. A unique opportunity for small-team involvement within a technically advanced environment. **Contact: Margaret Stevens**

Systems Programmer

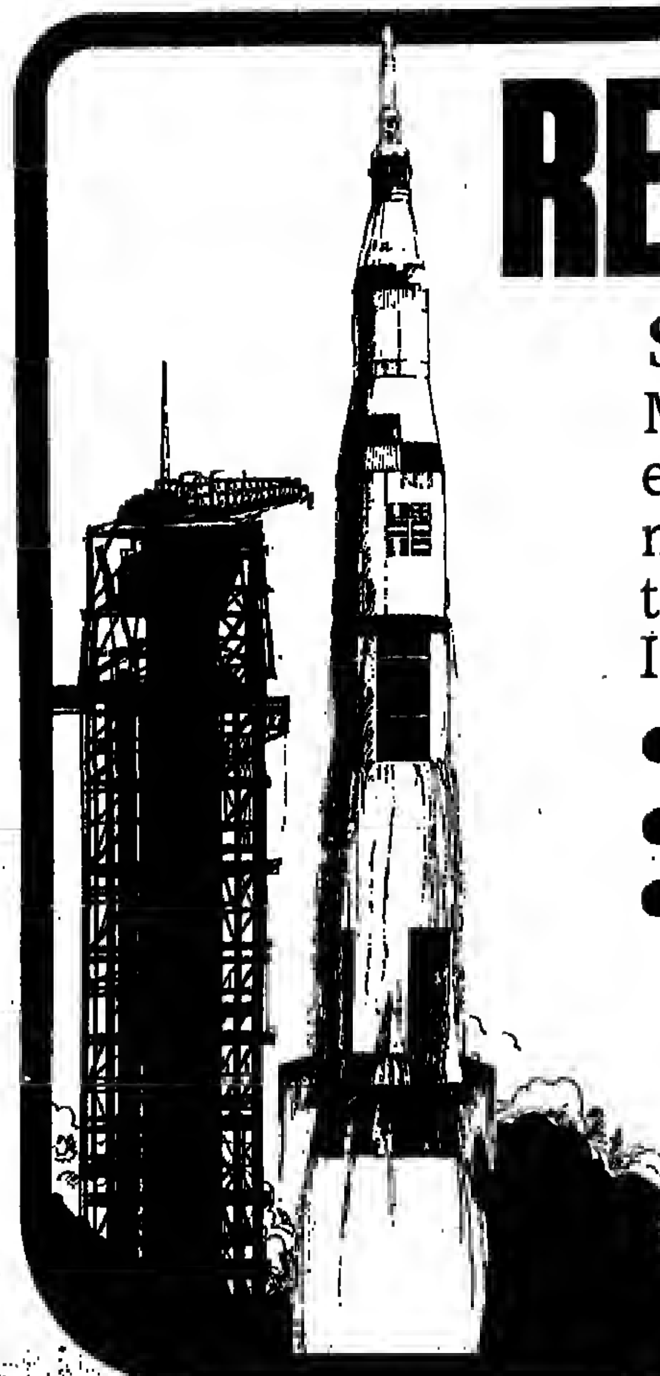
Central London **to £8,500 p.a.**

Eighteen months System Programming experience gained in a DOS/VS. CICS environment would be the ideal for this exciting, development position. However, if you have other IBM software experience and are keen to join an international bank, where you could develop into *the* software expert then please apply.

The banks main problem is that the software environment is going to be a full CICS based system, in preparation for the installation of an 4300, so the experience to be gained is absolutely superb. Talent and ability are the main criteria, not specific experience. All normal banking benefits would apply, including such things as a cheap mortgage, insurance and season ticket loan. **Contact: Andy Wright**

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.

(1821)



REACH FOR THE STARS

Salaries to: £10,000 (UK) £18,000 (Europe)

MARCOL urgently require experienced programming staff to support new and existing projects both in Europe and the U.K.

If you have experience in any of the following:—

- H66 GCOS/COBOL 74/IDS
- ICL 2900 VME/B IDMS TP
- PDP RSX/11 RTL/2 MACRO

MARCOL can offer you:—

- Highly competitive salaries
- A structured career path
- Interesting and challenging work
- A range of top-class company benefits
- Equity participation

Phone now or write to:
Penny Bailey,
Marcol Computer Services Limited,
60 Queen's Gardens, London W2.
Tel: 01-402 9355. (24 hour service)

Computing Services Association

MARCOL
Reaching for the stars (1890)

UNIVERSITY OF BIRMINGHAM
MICROPROCESSOR DEVELOPMENT POSTS
MICROPROCESSOR SYSTEMS LABORATORY

Applications invited for post of

COMPUTER OFFICER

within University's newly established Microprocessor Systems Laboratory. Preference given to professionally qualified applicants with relevant experience and familiar with software and hardware of a range of microprocessor systems.

Salary on scale £4402-£7410-£8769 (under review) plus superannuation.

MICROPROCESSOR GROUP
Three year contract post of

RESEARCH FELLOW/COMPUTER OFFICER

A Research Fellow/Computer Officer required to assist this Group in the development of demonstration material on MICROPROCESSOR SYSTEMS and INDUSTRIAL APPLICATIONS for inclusion in courses offered to industry. The successful applicant will be expected to liaise closely with industry and act in a consultative capacity on specific applications.

Preference given to professionally qualified candidates with relevant experience and familiar with a range of microprocessor systems.

Salary on scale £6052-£8769 (under review) plus superannuation for Research Fellow; as above for Computer Officer.

Further particulars available from Mr. R. W. Bushaway, Computer Centre, P.O. Box 363, Birmingham B15 2TT, to whom applications (three copies) including full curriculum vitae and naming three referees, should be sent by Friday, July 25, 1980. Please quote ref. CWX3. (1780)

HEAD OF DEPARTMENT OF COMPUTING SERVICES AND THE MICROPROCESSOR CENTRE

[illegible]

TRENT POLYTECHNIC NOTTINGHAM

New development ... banking environment ... with 2-4 years of ... Applications.

REQUIREMENTS:

COBOL — ESSENTIAL
RSX11 — PREFERABLE

PROSPECTS:

Excellent with future opportunities for European travel and a clearly defined career development path. Also immediate involvement with the latest technology.

BENEFITS:

A £25,000 MORTGAGE AT 3%!!!
£7,000-£8,500 + p.a. (Experience dependent)
BONUS
PAID OVERTIME
INTEREST-FREE LOANS (for season tickets, etc)
FREE BUPA
FREE LUNCHES

Telephone Bob Bower immediately to hear more about these excellent opportunities and to arrange a prompt interview.

Ref. CW 03/07

Hutton

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HR
TELEPHONE: 01-353 7141 (24 HOURS)

SPECIALIST RECRUITMENT CONSULTANTS

Programmer - York

We are an established bureau, based in York, offering a wide range of clerical, accounting and technical applications to industry and commerce. We have a vacancy within our Systems and Programming Department for a Programmer.

Applicants should have a minimum of one year's programming experience, and knowledge of ICL 1900 series equipment. Knowledge of the ICL 1500 series, and production/stock control experience would be added recommendations.

In addition to the attraction of working in the City of York, we can offer a progressive salary, flexible working hours and a non-contributory pension and life assurance scheme.

Please write for an application form to G.T. Bridge, Personnel Services Manager, Computerskills Limited, Blue Bridge Lane, York YO1 4AS or telephone 0904 20555 ext 340.

Computerskills

LONDON BOROUGH OF HAVERING
Educational Computer Centre

PROGRAMMER
Grade AP3/4
£4971-£6174 (Pay award pending).

To join a team working on the development of a ... independent computer managed learning and careers education and guidance systems used in a dozen U.K. centres.

The Centre has 2 x HP2100 computers using RTE IVB and a network of RJE micro computer systems is planned.

The successful candidate will join a small friendly professional team and be required to assist with the specification and analysis as well as programming developments in FORTRAN and perhaps PASCAL.

Emphasis is placed upon the ability to work independently, communicate with the team and produce good ... maintainable programs in standard FORTRAN IV ... deadlines.

Application forms and further details available from Havering Educational Computer Centre, Tring Gardens, Harold Hill, Romford, Essex RM3 9QX. Tel: 04023 49115 ... returned by 25th July, 1980.

JOIN THE ELITE

INTEGRATED OFFICE SYSTEMS c £37K + 2-Litre Car

You are selling/marketing with one of the major manufacturers and are ready for your next move to this outstanding WP/DP company acknowledged for its state-of-the-art technology and aggressive marketing strategy. Unparalleled benefits package includes high guarantee and open-ended commission structure. Contact Rosemary Forsyth. Sales and Marketing Division.

COMMERCIAL MINICOMPUTER SALES EXECUTIVE c £23,000 + choice of car

Major multinational with a progressive reputation seeks successful Sales Executive with established systems background for a national launch. In-depth product training, challenging career path/negotiable guarantee with private mileage included makes a professional package. Contact Rosemary Forsyth. Sales and Marketing Division.

DISTRIBUTED DATA PROCESSING/SHARED LOGIC WP SENIOR SALES EXECUTIVE c £20,000 + car (negotiable guarantee)

Major multinational, heavily commited to the office of the future concept, has a rare opportunity for a professional Computer Sales Executive to spearhead a proven and comprehensive range of terminal systems.. Sophisticated marketing strategy, first-class sales and software support, excellent fringe benefits, and planned promotion make an unbeatable package. Contact Rosemary Forsyth. Sales and Marketing Division.

BANKING SYSTEMS SUPPORT MANAGER £15K + Car

Help launch this exciting new Banking Hardware Package in the U.K. Market.

Ideally you have experience within a major computer company, with a bias towards network installation, and knowledge of retail banking or Building Society systems.

A pre-sales support function involving evaluation of software requirements and collation of reports and specifications.

To apply for this excellent opportunity your contact is Carrie Hayward, Sales and Marketing Division.

HODGE RECRUITMENT
Abford House, 15 Wilton Road, London SW1V 1LT
(01) 828 9040 (1803)

UNIVERSITY OF SALFORD

MANAGEMENT SERVICES OFFICER
£10,142-£12,864
(under review)

Applications are invited for the post of Management Services Officer in the Registrar's Department of the University. The person appointed will be directly responsible to the Registrar for the management of the administrative computer unit and for the continued development of data processing facilities for the department.

Further particulars available from the Registrar, University of Salford, Salford M5 4WT, to whom letters of application giving details of age, experience and qualifications, together with the names of two referees, should be sent by 25 July, 1980, quoting reference number A/688/CW (1845)

UNIVERSITY OF ABERDEEN
COMPUTING CENTRE

The University's Computing Centre operates a Honeywell dual processor 66/80 system which supports a large terminal network.

Applications are invited for the following posts:

SUPPORT MANAGER and SUPPORT OFFICER

Duties of the posts will include the first line maintenance of the mainframe and communications processor operating system, the quality assurance of all hardware and software used and the general monitoring of the performance of the facilities provided. The Support Officer will assist the Support Manager in these duties.

Applicants for the post of Support Manager should have several years' programming experience on a large mainframe, be familiar with the problems of providing a service to a large user population over a communications network, and be capable of dealing tactfully with users and external agencies.

Applicants for the post of Support Officer should have several years' experience in Computer Operations, have the ability to program in Fortran or Assembler and preferably have a knowledge of communications systems.

Salary for the Support Manager, within O&G Grade II, £8,527-£10,484 per annum, and for the Support Officer, within Grade IB, £4,402-£7,410, with appropriate placing.

Further particulars from The Secretary, The University, Aberdeen, with whom applications (two copies) should be lodged by 25th July, 1980. (1794)

HAVEN

Contracts

N. EUROPE
At least 2 yrs. IMS on one of above.

Analyst/Programmers IBM Mainframe, COBOL, Solid IMS	14/27/80
Micro Programmers Data Communications/Message Switching	15/27/80
Analyst/Programmers Univac VMS, Min. 1 yr. exp. TIPS.	16/27/80
3031/3033 COBOL Application Programmers At least 2 yrs. IMS on one of above.	17/27/80

LONDON

Mobile IDMS Designer Preferably COBOL/CICS background. Initially 6 months.	18/27/80

KENT

PL1/BAL Programmer Min. 2 years' experience.	19/27/80

HAVEN INFORMATIX LIMITED
Recruitment Consultants
24 Grayshan Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

Recruitment LOGISTIX In informatics

Message Switching /Comms.
Rheinland Germany : Salary to £18K

Our client is an internationally respected Systems Supplier with several offices in West Germany. A rapid expansion programme involving the establishment of new project teams working in the areas of Data Communication, Message Switching and Mini Software provides outstanding opportunities for ambitious candidates to join this high technology company. Successful applicants will be either graduates in a numerate subject or alternatively, have practical experience in advanced, distributed processing and networking applications on mini-computers. You are likely to be either a Systems Designer or Software Programmer in a Mini Computer environment and have extensive Assembler experience. Candidates who can offer some knowledge of German will be especially welcome.

Ref: L/27/A

Micro Software Manager
London : Salary £10K+car

This position represents an outstanding opportunity for a career-minded individual aged 25-30 years to join a recently formed division of an overseas electronics company. Candidates should be familiar with current micro-processor and micro-computer technology and in addition be conversant with marketing trends and sales techniques. It is preferable to have had exposure to the hardware and software of such products as Apple, Pet, Cromemco and Horizon and the wider range of small business machines currently available. Work content will include software problem solving, customer liaison, presentations and training. The position is located in Central London and first interviews will be held on the company's premises.

Ref: L/27/B

IBM Systems & Applications
Paris : Salary to £16K+benefits

A multi-national organisation with data centres throughout Continental Europe has an immediate requirement for several Senior Applications Programmers and Systems Programmers to work on a permanent basis at its Paris installation. Suitable candidates should have several years' experience of Assembler applications programming or systems/software experience with IBM 370 or 43XX hardware, running under DOS and/or CICS. However, those applicants with applications or systems experience of an independent suppliers T.P. monitor should also apply. Whilst spoken French is not essential, for social and cultural reasons particularly, we recommend at least a rudimentary knowledge of the language. Two of the company's Senior M.I.S Managers will conduct preliminary interviews in London.

Ref: L/27/C

Network Project Leaders
Gr. London : Salary to £12K

A well-known European Systems Supplier and Consultancy with a recently established U.K. subsidiary is seeking several Project Leaders with extensive experience of data communications and networks in a banking or other financially orientated environment. Successful candidates will preferably be graduates and aged 27-34 years. You should have a minimum of five years' Programming and/or financial applications consultancy experience, gained in either a commercial, merchant banking, stock-broking or investment orientated environment. Our clients would prefer those who have current experience in an installation having extensive mainframe and mini-computer capabilities in an online mode. Multi-tasking and fail-safe computing techniques are particularly valued skills and will reflect in the salary offered.

Ref: L/27/D

Software Trainers
Berks/Bucks : Salary to £10K

A leading manufacturer of mini-computers is seeking several Software Trainers for its U.K. Regional Headquarters. Work content will include the staff training of both existing and prospective customers in general D.P. techniques and the individual requirements and capabilities of the company's software. Education currently takes the form of product demonstrations, seminars, workshops and of course, inevitable "on-the-job" learning. The development of software courses in areas not so far covered by the company will form an essential and integral part of the position. The company has a stated preference for candidates who can combine previous FORTRAN and/or ASSEMBLER programming in a practical environment with past or current experience as a Software Lecturer or Trainer in an academic or manufacturing environment.

Ref: L27/E.

IBM Systems Engineers
Germany & Switzerland : Salary £22K

We have rare opportunities for Senior Systems Engineers and Project Managers for permanent career positions in Rhineland Germany, Bavaria and Switzerland. Technically, you must demonstrate continuous exposure to the implementation or support of Data-Base and Teleprocessing systems. It is a pre-requisite to offer "hands-on" Software experience with IMS/DS-DC; CICS/VS; MVS or with the D.B. or T.P. Software of an independent supplier. The Company offers higher than average salaries (even by Continental standards) plus a range of extensive and practical benefits. Interviews can be arranged to suit individual requirements.

Ref: L/27/F.

Business Consultants
London : Salary to £14K

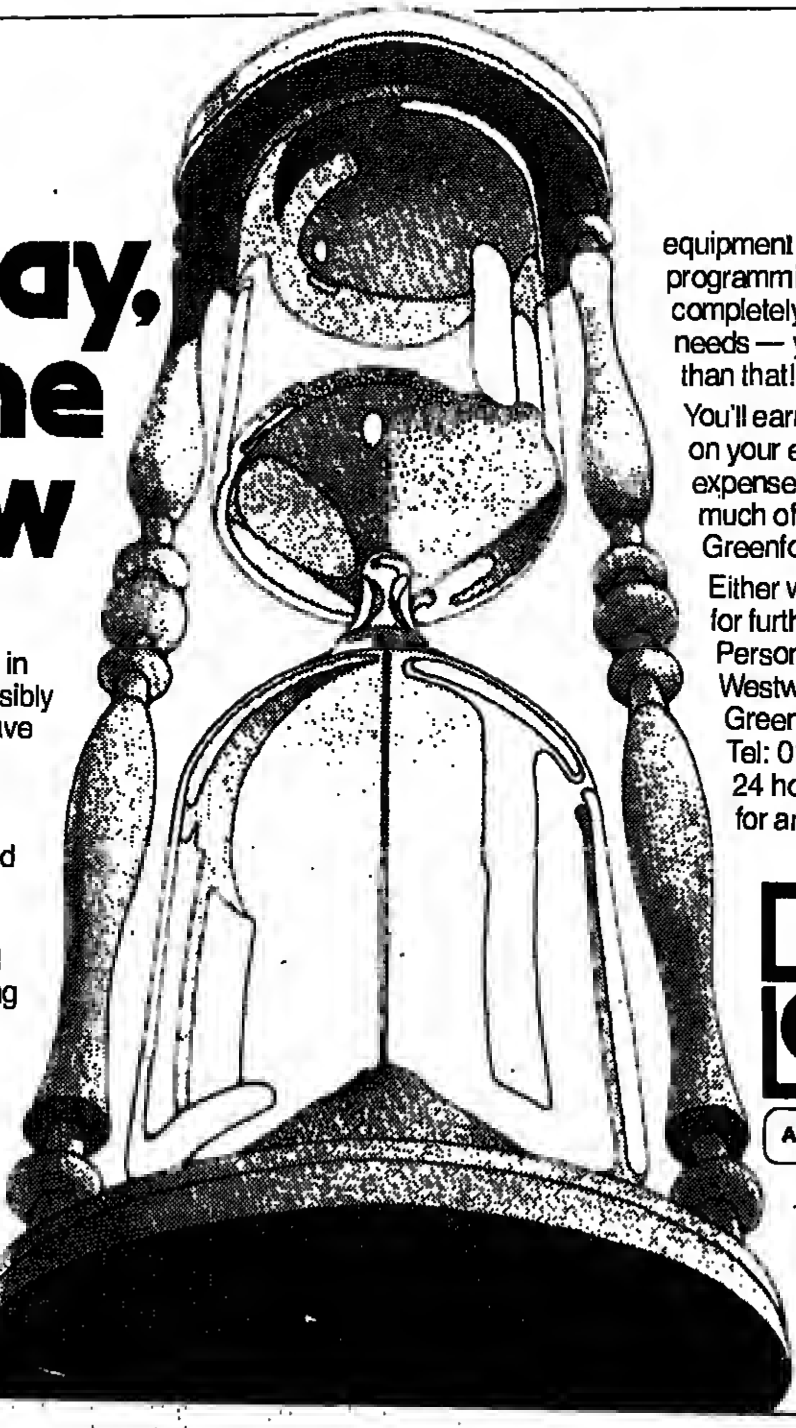
A leading International Programming and Systems House based in Central London, has an urgent requirement for project team specialists. Top salaries will be paid to ambitious, presentable candidates who enjoy involvement with customers, developing systems and solving business problems. Successful candidates will probably be graduates with a minimum of two years' commercial programming experience. Knowledge of both high-level and low-level languages will be a distinct advantage. If you have designed at least one complete on-line system or project management experience, you will be considered for more senior positions.

Ref: L/27/G

(1822)

Logistix, 10 Grenville Place London SW7 4RW
01-373 3063 LOGISTIX Telex: 28800

Here today, gone tomorrow



The computer systems a company invests in today will be outdated in a year or two, possibly obsolete in five. Yet few computer users have the resources or the justification to update continually — so you, as a professional programmer, have to move companies to keep in touch with changing technology and techniques.

But there's a better way to keep abreast of the industry: with Data Logic's Professional Services Division. As one of Britain's leading software houses, we're in a position to specify and implement the very newest ideas on every assignment for industry and commerce, finance and government clients. We specialise in large-scale, multi-size or multiprocessor systems which often call for a selection of different equipment makes and for very advanced programming techniques. We've even specified completely new languages to meet specific client needs — you can't get more ahead of your time than that!

You'll earn between £6,000—£10,000 depending on your experience plus profit share and travel expenses — you must be prepared to spend much of your time on customer sites, from a Greenford base.

Either write with full career details, or telephone for further information, to: Barbara Hawkins, Personnel Department, Data Logic Limited, Westway House, 320 Ruislip Road East, Greenford, Middlesex UB6 9BH.
Tel: 01-578 9111. Alternatively telephone our 24 hour answering service on 01-235 1535 for an application form.

Data Logic
A Raytheon Company

Where time is on your side.

MARTINS

MANAGEMENT PROJECT LEADERS

SENIOR SYSTEM ANALYSTS WITH EARLY PROMOTIONAL OPPORTUNITIES TO SYSTEMS DEVELOPMENT MANAGER. At least 6 years' D.P. specialising in On-Line Retail Commercial Systems. Area: Warwickshire. Salary: £7500 plus relocation. Ref: SA285.

COMPUTER MANAGER. Small mainframe. At least 6 years' experience on commercial applications using IBM Assembler or RPG. Area: Staffs. Salary: £NEG. Ref: M69.

PROJECT LEADER AND SYSTEMS ANALYSTS. At least 4 years in D.P. knowledge of On-Line Distributive Systems. Area: Leicester. Salary: to £8000. Ref: SA224.

SYSTEMS ANALYSTS MANAGEMENT

COMMUNICATIONS SPECIALIST. At least 6 years using IBM and Mini Hardware. Area: Peterborough. Salary: £NEG. Ref: SA270.

COMPUTER MANAGER. Several years' experience on Honeywell Mainframe and DEC Mini Computer. Area: Staffs. Salary: £NEG, plus company car. Ref: P494.

SENIOR SYSTEMS ANALYST. At least 5 years' D.P. experience including Project Management level to lead a team of 5 Analysts and Programmers specialising in Sales and Financial systems. Formal Programming background desirable. Honeywell Hardware an advantage. Area: North Staffs. Salary: to £8,800 plus relocation package. Ref: SA277.

PROJECT LEADERS SYSTEMS ANALYST

SENIOR SYSTEMS SPECIALIST. At least 3 years' Commercial Systems preferably with IBM Cics IMS experience. Opportunity to work overseas. Area: Nottinghamshire. Salary: According to experience but very competitive. Ref: SA278.

BUSINESS SYSTEMS ANALYST. At least 5 years in D.P. Good knowledge of O. & M. and O.R. Techniques required including working at Project level. Area: Wiltshire. Salary: To £9,000. Ref: SA204.

D.P. MANAGER for existing ICL Systems 10 installation. At least 5 years in D.P. including Management level. Knowledge of Assembler or RPG II essential. Area: Near Wolverhampton. Salary: to £8,500. Ref: M73.

ANALYST PROGRAMMERS/PROGRAMMERS

ANALYST PROGRAMMER. At least 3 years in D.P. using Cobol. Experience with Software Support or Database Design an advantage. Area: Coventry. Salary: to £7,500. Ref: P474.

PROGRAMMER. At least 1 year programming in RPG II or willing to retrain experienced programmer using another language. Area: Cotswolds. Salary: £5,900 plus. Ref: P473.

SYSTEMS SOFTWARE PROGRAMMER AND APPLICATIONS PROGRAMMER. At least 18 months Cobol, preferably working in a DOS environment. Experience using any other manufacturer's Cobol considered. Opportunities to move into inter-active programming using CICS DL1 DOS/VSE, DB and TP Systems. Area: Rural Lincolnshire. Salary: £6,600 plus relocation package. Ref: P77.

ANALYST PROGRAMMER. At least 3 years in D.P. for both maintenance and new development work. Main language RPG, also Cobol. Area: North Warwickshire. Salary: to £8,000 plus relocation expenses. Ref: SA282.

ANALYST PROGRAMMERS/PROGRAMMERS ANALYST PRO.

PROGRAMMER. At least 1 year's programming in RPG II or willing to retrain experienced programmer using another language. Area: Leicestershire. Salary: to £6,000. Ref: P504.

SENIOR PROGRAMMER. At least 2 years using IBM Cobol. Area: Leicester. Salary: to £7,700. Ref: P330.

RPG II PROGRAMMER. At least 18 months' experience. New IBM 4341 shortly being installed. Area: Birmingham. Salary: c. £5,500. Ref: P502.

ANALYST/PROGRAMMER. At least 2 years programming in Cobol. Area: Wolverhampton. Salary: to £7,500. Ref: SA284.

OPERATIONS SUPPORT PROGRAMMER. At least 18 months' Cobol and Assembler. New On-Line Database System shortly. Area: Northamptonshire. Salary: to £6,000. Ref: P489.

COBOL PROGRAMMER. At least 1 year's Commercial programming experience. Area: Wiltshire. Salary: to £7,000. Ref: P508.

JUNIOR COBOL PROGRAMMER. Around 1 year's Commercial Programming or Graduate who has completed 1 year's Industrial training using Cobol. Area: Swindon. Salary c. £5,000. Ref: P509.

ANALYST PROGRAMMER. DSC Hardware using RTL2 Process Control Applications preferred. Area: Nottingham. Salary: £Negotiable. Ref: SA279.

DIBOL OR BASIC PROGRAMMER. DEC Hardware 1 year plus experience. Area: Northamptonshire. Salary: to £7,500. Ref: P508.

SENIOR PROGRAMMER. At least 3 years ICL Cobol and Plan to overhaul existing systems and implement packages. Area: Redditch. Salary: to £7,000. Ref: P507.

PROGRAMMER ANALYST. At least 12 months programming in Datashare or similar language. Area: South Warwickshire. Salary: to £7,000 plus company car. Ref: P4217.

D.P. OPERATIONS PERSONNEL

OPERATIONS MANAGER. At least 6 years in D.P. using IBM Hardware under DOS/VS CICS. Experience in Software Programming essential. Area: Worcestershire. Salary: £NEG. Ref: M7[illegible].

COMPUTER OPERATORS. To Senior level. At least 1 year's Operating experience on IBM Hardware under OS. Current Operating systems include MVS, JES2 and VM. Salaries: to £7,500 according to experience plus relocation package. Area: Worcestershire. Ref: O232.

D.P. OPERATIONS PERSONNEL D.P.

OPERATIONS CONTROLLER. At least 3 years [illegible] ICL 1900 range using George III. Area: Wiltshire. Salary: to £7,000. Ref: [illegible]

COMPUTER OPERATORS required for most areas throughout the MIDLANDS. Salary according to experience.

SENIOR OPERATOR. At least 3 years in D.P. Operations using OS/VS, VS1, [illegible] Wiltshire. Salary: to £7,000. Ref: O213.

RING GRAHAM ASTON

MARTINS COMPUTER SERVICES
1st FLOOR, WESTERN HOUSE
SMALLBROOK QUEENSWAY
BIRMINGHAM, B5 4HQ
24-HOUR ANSWERING SERVICE
021-643 2111

SPECIALISTS IN D.P. RECRUITMENT

SOFTWARE- At the heart of Design- and Manufacture

Marconi Communication Systems Limited is best known for its total capability in the design and manufacture of complete turnkey communication systems in use throughout the world.

To undertake challenging work in respect of systems design and testing we now require the following men or women:-

SENIOR SOFTWARE DESIGNER

To specify and design Real-Time systems for application to our communication equipments. A relevant degree is essential, together with at least 3-years Software Design experience, not necessarily microprocessors in a real-time technical rather than commercial environment. A knowledge of Coral Programming would be advantageous.

ATE PROGRAMMER

To devise automatic test procedures and specifications for a variety of analogue and digital PCBs and assemblies.

The work requires a detailed knowledge of a variety of automatic test equipments and a good understanding of digital integrated circuits including complex LSI devices.

Candidates must be qualified to HNC or Final City & Guilds, and have a minimum of 4-years experience in electronics.

An attractive salary, based upon experience, will be offered, together with relocation expenses where appropriate.

Applicants should please telephone or write for an application form to Gordon Short, Marconi Communication Systems Limited, New Street, Chelmsford, Essex. Telephone: Chelmsford (0245) 353221.

MARCONI COMMUNICATION SYSTEMS
A GEC-Marconi Electronics Company

UMIST

Applications are invited from candidates of either sex for the following posts which will support the research activities of the recently appointed Professor of Applied Control Engineering

EXPERIMENTAL OFFICER

REF CSC/114/CJ This post will be concerned with the development and deployment of equipment for research in the areas of adaptive control, intelligent control systems, pattern recognition and allied topics which rely upon a high degree of mini and micro computing technology.

Salary will be on the scale £4402-£7410 per annum

RESEARCH ASSISTANT

REF CSC/115/CJ This post will be concerned with the development of a comprehensive set of on-line computer-aided control systems design facilities

Salary will be on the range £4402-£5052 per annum

In both cases, an interest in the hardware and software aspects of digital computing equipment would be valuable

Requests for application forms and further particulars, quoting the appropriate reference, should be addressed to the Registrar, Room 86, UMIST, PO Box 88, Manchester M60 1QD. The closing date is the 31st July, 1980 (1828)

BIRBECK COLLEGE
(University of London)

BSc. Applicable Mathematics by Evening Study

Birbeck specialises in offering a range of BA and BSc degree courses designed for evening study so that students may continue earning their living during the daytime. From October 1980, we will offer a new course leading to the BSc (Honours) degree of London University. Topics to be covered include operations research, numerical analysis, computer systems, and program packages (such as GLIM and SPSS). The course combines the essential mathematics with applications in statistics and computer science. Intake will be limited to 40 students

For details, please contact The Registrar, Birbeck College, Malet Street, London WC1E 7HX. Tel. 01-637 9983 (out of office hours an answering machine operates).

DATA PROCESSING MANAGER

required to control three computers, CTL and Wang, and write further programmes, Basic and Cobol. Experience required — Accounts to trial balance, statistics, experience with CTL equipment and laboratory environment an advantage, but not essential.

Salary to £10,000 p.a. with benefits, depending on experience, etc.

Applications in writing with C.V. to Mrs. A. Hornel, 608 Cadogan Square, London, S.W.1 (Phone 01-584 4282). (1863)

Leeds POLYTECHNIC

School of Accounting and Applied Economics

LECTURER II IN QUANTITATIVE METHODS IN BUSINESS AND SOCIAL SCIENCES

Applicants should possess a relevant degree and/or professional qualification with industrial or teaching experience in at least two of the following: Statistics, Business Mathematics, Operational Research, Computing, Systems and Data Processing.

Salary Scale: £4851-£7794

Details from:
The Services Officer, Leeds Polytechnic, Calverley Street, Leeds LS1 3HE. Tel: 0532 462368.
Closing date: 18 July, 1980. Please enclose s.a.e. (1809)

ROBERT GORDON'S INSTITUTE OF TECHNOLOGY
Computer Services Unit

SYSTEMS PROGRAMMER

required for maintenance/development of systems software on a DEC system — 20 multi-access computer. Applicants should be graduates with suitable experience, preferably on DEC 10/20 systems.

Salary on a scale up to £6,975 (under review).

Local Government Superannuation Scheme.

Application forms from:

**Secretary to the Institute
ROBERT GORDON'S
INSTITUTE OF TECHNOLOGY
Schoolhill, Aberdeen AB9 1FR** (1826)

UNIVERSITY OF SALFORD

MANAGEMENT SERVICES OFFICER

£10,142-£12,564
(under review)

Applications are invited for the post of Management Services Officer in the Registrar's Department of the University. The person appointed will be directly responsible to the Registrar for the management of the administrative computer unit and for the continued development of data processing facilities for the department.

Further particulars available from the Registrar, University of Salford, Salford M5 4WT, to whom letters of application, giving details of age, experience and qualifications, together with the names of two referees, should be sent by 28 July, 1980, quoting reference number A/858/CW. (1845)

PROGRAMMERS FOR ENGINEERING AND SCIENCE

We are a specialist agency covering the fields of ENGINEERING & SCIENCE.

If you have experience in the above areas using **FORTRAN, ASSEMBLER, CORAL** or any other Science related language please contact **RAY DARKER** on **CRAYFORD (0322) 61921** for a confidential discussion regarding your career prospects.

SALARY RANGE £4000-£10000 ALL AREAS

Staffline (Southern Ltd), 8 Crayford High Street CRAYFORD, KENT (1818)

CONTRACT REQUIREMENT

HEWLETT PACKARD NETWORK EXPERT

To act as Project Manager leading small team to work in SWITZERLAND — 12 months commencing August.
Please contact Daphne Jones — Force 8 Computer Services — 01-680 3761. (1819)

FORCE 8 Computer services
8 Mint Walk Croydon 01-680 3761

CORAL ASSEMBLER

Real time mini projects in Berks, Hants, Surrey
Contract or Permanent
Crowthorne 77921
or 3370 day
Farnborough (Hants)
46083 eve./w'end.

SYSTEMS ANALYST

For large engineering co., Brentford. Min. 2 yrs. S.A. exp. IBM 370 OSVS1 —1 Meg. Op on exc. working cons.

Contact Stephen Symons Marlow Employment Agy. [illegible] (1850)

MICRO CONSULTANTS

Micro systems specialists with in-depth knowledge of both hardware and software, plus analysis and design experience in such applications as message switching, communications or command and control systems urgently required for projects based in London and the Home Counties.

to £12K

MESSAGE SWITCHING

Consultants required for pre- and post-sales work in Message Switching Division of major UK Systems and Software House based in Central London. Proven ability in a front role is essential. 3+ years in the message switching field desirable.

c £11K

MINIS BERKS.

Programmers and Analyst/Programmers with at least nine months' COBOL experience, gained in a batch or on-line environment, for customer support team of Mini manufacturer with H.Q. in Berks. Knowledge of financial applications necessary. opportunities to learn data base techniques.

£6.5-£9K

ENGINEERS

Choose from South Wales, Herts. or Bucks. as locations to exercise your Electronic/Electrical Engineering expertise. Experience gained in the Electronic/Aerospace Industries, plus knowledge of ATE and LSI design, Systems Design or applications engineering, an advantage. Systems vary from single micro applications to multi-computer systems.

£5.5-£9.5K

SALES SUPPORT

18 months plus experience. Assembler on Minis with knowledge of operating systems for post-sales software support role involving installing operating systems, some customer training, and providing ongoing support. Opportunities will be given for pre-sales involvement. Previous experience in a customer liaison environment an advantage.

c. £8K + car

Data-Base & Datacomms

Programmers Designers & Consultants

The company: a Multinational Consultancy specialising in database, teleprocessing and communications systems, with European offices in England, Germany and the Netherlands. The company is growing rapidly and to sustain this growth requires additional expertise at many levels.

The opportunities: experience in the fields of Database Design, Network Design, Message/Packet Switching, Data Dictionary or similar is of considerable interest to our clients. In particular the requirement is for Systems Programmers, Programmers and Designers with knowledge of Codasyl Databases and CICS or TPMS, Consultants in the Communications field with experience of X25, Message Switching, etc., and Database Project Managers.

For overseas positions language ability is a distinct advantage. Long-term prospects for successful applicants are excellent as the company's policy is for promotion from within. An excellent benefits package accompanies the top salaries offered.

UK to £16K—EEC to £20K

PROCESS CONTROL

Real-time mini (pref. PDP11) or micro experience for advanced design and development work in Process Control applications, required by leading Instrumentation and Control Group based in Herts. Ideally 2-4 years' Assembler or CORAL should be offered. Project leaders also required.

£6.5-£11K

SYSTEMS DEVELOPMENT

The Surrey-based Management Services Division of our client, probably ranked No. 1 in the commercial/leisure services sector need Junior and Senior Systems Analysts, Projects Manager and a Chief Programmer. IBM, Cobol, Production Control, DOS/VS are the sought-after background areas.

£5K-£11K

MILITARY SURREY

Defence-orientated Systems House requires Programmers with experience in some or all of the following disciplines: Mathematical Modelling, Real-time applications on Minis and Mainframes. Knowledge of Databases with languages Algol, Coral, Assembler equally advantageous.

£5K-£9K

HOLLAND

Programmers and Analyst/Programmers with 2-5 years' Mini Assembler gained in a scientific or technical environment required by International Systems Group, based in Holland. Applications include Process Control, Simulation, Networks and Message Switching. Permanent positions only, generous relocation assistance offered to successful applicants plus an excellent benefits package. **£12-£17K**

MIDDX.

Senior Analysts, Team Leaders and Senior Programmers for Systems Development section of leading British industrial organisation. Involvement is with commercial projects on a variety of hardware ranging from North Star micros through Datapoint Minis to IBM 3033s. General commercial background required, experience of more than one hardware range useful.

£9-£11.5K

MATRIX
10 Grenville Place
London SW7 4RW
01-373 3063
to 8.30pm 7 days a week

If the job you're seeking isn't featured call Matrix - if that job exists we'll go to great lengths on your behalf.

MATRIX

MYRIAD

SYSTEMS CONSULTANTS HARDWARE AND SOFTWARE

BERKSHIRE **CIRCA £10,500**

A number of outstanding opportunities have arisen for both SOFTWARE and HARDWARE consultants as a result of the increasing demands being placed upon our client's System Reliability and Usability Departments.

Our client can offer you the opportunity to direct the development of future Hardware and Software in the key fields of:

- ★ USABILITY ENGINEERING
- ★ RELIABILITY ENGINEERING

with Key responsibility for:

- ★ DEFINING DEVELOPMENT OBJECTIVES
- ★ COMPETITIVE EVALUATION
- ★ OPERATIONAL ANALYSIS

To meet the challenge that these positions offer, applicants must have a successful record, and substantial experience matching one of the following profiles.

SOFTWARE
- ★ SYSTEMS SOFTWARE DESIGN
- ★ OPERATING SYSTEMS
- ★ SYSTEM MODELLING

HARDWARE
- ★ MAINFRAME DESIGN ENGINEERING
- ★ LOGIC DESIGN
- ★ SYSTEMS ORIENTATION

Conditions of employment are excellent and good commencing salaries are enhanced by first-class career prospects and fringe benefits. A generous relocation package is available where appropriate.

Ref: SW1/0307/CW

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

(1559)

Programmers/Systems Analysts

The Australian High Commission has a range of vacancies for computer personnel ranging from junior programmer responsible for a variety of program maintenance tasks, to senior systems analyst responsible for devising new systems and leading a small team of analyst/programmers in seeing projects right through to a fully documented production system.

The High Commission possesses an IBM 370/138 operating under Power/Dos/VS. Programming is in COBOL. Currently systems are developed in batch mode, however new developments indicate that we may soon be able to consider on-line applications using CICS.

If you are interested in joining a small hard-working team and feel you have something to offer us than we should be pleased to receive your application.

Salaries are in the ranges £7628 to £8225 and £8700 to £10120. Other benefits include pension scheme, 4 weeks' annual leave, British and Australian public holidays (13 days a year in all), flextime, social club and other amenities.

Applications to Recruitment Officer, Australian High Commission, Australia House, Strand, London WC2B 4LA.

(1826)

DOS/VSE Technical Support

France **23,000 p.a.**

We are currently assisting a multi-national company in the transition from non-IBM kit to a network of 4300's. As each of the 3 French installations take delivery of their machine, they will require several months of on-site technical consultancy. This role is a wide-ranging one and will include providing technical advice, backing and support, undertaking trouble-shooting duties when necessary, plus liaising with the central project team who are converting each installation's systems to run on the 4300's. To apply for this position you should have in-depth knowledge of DOS/VS – previous VSE experience is not essential. Knowledge of French will be a definite advantage, and you will be expected to achieve reasonable fluency in the first 2–3 months of this one year assignment.

For further details, please telephone or write to Brian Bidston at our UK offices, or call during evenings/weekends on 03446 5385.

cds The European 370 Specialists

67-73 Park Street, Camberley, Surrey GU15 3PE. Tel. 0276 25845. Telex 858082.

(1795)

Lecturers

Marconi College, pleasantly situated in Chelmsford, is responsible for training the professional software staff of the GEC/Marconi Group and customers in programming techniques and on software systems chiefly in the real-time field. Applications of mini and micro computers in Radar, Communications, Avionics, Defence and Automation Systems are covered.

Vacancies exist in an expanding team for applicants with a degree or equivalent qualification and/or relevant experience.

Previous teaching experience desirable but not essential; motivation is.

Salaries in range £5,500-£7,500 plus benefits.

Write to: Frank Braybrook, Central Services Unit, GEC-Marconi Electronics Limited, Marconi House, New Street, Chelmsford, Essex CM1 1PL.

GEC-Marconi Electronics Ltd.

BALLY

Bally Group (UK) Limited

D.P. SUPERVISOR

BALLY'S SHOES LTD.

A leader in fashion shoes, require an Experienced Analyst/Programmer to supervise the day-to-day operations of their I.B.M. System 34.

The successful applicant will also assist the E.D.P. Manager in systems development and programming and should have experience of RPG-11, Cobol, and working in an on-line environment.

This is an opportunity to join a small dynamic team at an exciting stage of systems development.

Excellent salary and working conditions.

Apply in the first instance for an application form to: Gwen Skedge, Personnel Officer, Bally's Shoe Co. Ltd., Hall Road, NORWICH NR4 6DP. Telephone: 21414.

SR. SYSTEMS ANALYSTS Must have developed one medium to large system	LONDON	to £10,000 Bill
CHIEF PROGRAMMER 2903/4 experience with COBOL and EXEC.	N. LONDON	to £8,500 Peter
SYSTEMS ANALYSTS Be able to communicate at all levels.	LONDON	to £9,000 Bill
TRAINEE ANALYSTS Senior Programmers or Programmer/Analysts will be re-trained.	LONDON	c. £8,000 Peter
PROGRAMMERS Two years' experience in Assembler or PL1.	LONDON	c. £7,400 Bill
COBOL PROGRAMMERS 18 months' min. COBOL experience. Jobs on Mainframes and Minis.	LONDON & S.E.	to £8,000 Peter
SALESMAN Sell hardware for an international company.	BERKS	O.E. £15,000 + car
FORTRAN ANALYST/PROGRAMMERS Well-educated, motivated people to work for major U.K. Co.	LONDON	to £8,500 Peter

FOR MORE INFORMATION ON THESE AND OTHER VACANCIES TELEPHONE:

01-[illegible] Peter [illegible] or Bill [illegible]

Barson, Taylor & Ward Computer [illegible]

BARSON TAYLOR & WARD

SPEND TWO YEARS SUPPORTING ICL 2900s IN SOUTH AFRICA

£10,000 upwards + super benefits

Our clients urgently require SUPPORT ANALYSTS/PROGRAMMERS with a minimum of 4 years experience and ICL SOFTWARE SPECIALISTS with a minimum of 8 years' experience for attractive 2-year contracts in Johannesburg.

Interviews will take place in London on 8th July, so could you please telephone CRAD STOLPER of PRESCOT COMPUTERS on 01-434 2086/9 to establish whether an interview is worth while.

PRESCOT COMPUTERS LIMITED, 43 Conduit Street, London W1R 9FB

PORTSMOUTH H.M. SHIPS [illegible]

PRIME NEW YORK [illegible]

To £8.5K **ANALYST PROGRAMMER** Surrey
You will need at least 2 years experience of commercial/business systems, plus the ability to cope in a small set-up. Excellent working conditions

To £10K **TEAM LEADER** London
Minimum of 5 years COBOL and ICL experience required, together with team leadership ability. On-line experience an advantage.

£6-8K **PROGRAMMER** London
At least 2 years ASSEMBLER experience necessary and preferably familiar with minis and micros. Take responsibility for individual projects, for which a performance bonus is awarded.

Many more unadvertised positions

COMPUTECH SYSTEMS & PERSONNEL
168 Finchley Road, London NW3

ESSEX COUNTY COUNCIL
LOUGHTON COLLEGE OF FURTHER EDUCATION
Borders Lane, Loughton, Essex IG10 3SA
Tel. 01-508 5311

LECTURER II IN COMPUTING

(To start 1st September or as soon as possible)

Applications are invited for the above post to teach BASIC and COBOL on a range of full time and part-time courses.

Candidates should have recent experience in the computing industry, preferably in software, and should be prepared to assist in the running of special short courses and with the design of software packages for college administrative applications.

The post is new to the Department of Engineering and Science and arises from an expansion of computer work within the college. It would be an advantage to be able to offer one or more of the following as ancillary subjects: Systems Analysis, Data Processing, Pascal, Assembler Language (6502).

Salary: £5,551-£7,755 (under review) plus £177 fringe allowance.

Further details and application form available from the Principal to be returned within 15 days of the appearance of this advertisement. Loughton College of Further Education, Borders Lane, Loughton, Essex. Tel. 01-508 5311.

(1793)

OCC *Contracts Personnel*

Middle East

H.L.66-DM IV

Tax free package to c$55,000

Systems, Programming and Training Consultants are required for various long-term assignments. Commercial or technical experience on H.L66 is essential.

PDP11-RSTS/E

Excellent package £Neg

This includes basic fees, accommodation, car, insurance, expenses, fares, etc.

Systems Programmer — RSTS/E experience essential.

Applications Programmer with BASIC + experience on any hardware.

Early availability ideal.

For further details please contact:
Roger Allington, quoting FL28
OCC Contracts Personnel
1 Shooters way Park
Berkhamsted, Herts. HP4 3NX
Tel. Berkhamstead 2299 (day/evening)

04427-2299

UNIVERSITY OF EDINBURGH

UNIX SYSTEM SUPPORT OFFICER

[illegible] ... Secretary to the University, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL, to whom completed application forms should be returned by 21 July, 1980. Please quote Reference 7012.

(1828)

DERBY COLLEGE OF FURTHER EDUCATION
Wilmorton, Derby DE2 8UG
Tel: Derby 73012

Applications are invited for the post of:

Lecturer Grade 2 — Computer Education

Salary: L.2 £4,861-£7,794 (under review).

Further details and application forms may be obtained from the Chief Administration Officer, to whom they should be returned as soon as possible.

(1820)

Geophysical Technical Assistant

We require a Technical Assistant in the age range 20-25 to work in our Geophysical Research Branch in London.

The Assistant will undertake many types of numerical and graphical work and will be much concerned with using and programming digital computers. Little or no laboratory work is entailed though there will be a small amount of field work. 'A' levels or HNC in one of the following is essential – Physics/Mathematics/Computer Science/a related subject. Experience with digital computers would be a distinct advantage as would some knowledge of electronics.

We offer an excellent salary which, together with a non-contributory pension scheme, subsidised lunches and sports and social facilities, represent outstanding conditions of employment.

Please write with details of qualifications and experience, quoting reference FY.872, to:

BP

Sue Bartholomeou,
Central Recruitment,
The British Petroleum Company Ltd.,
Britannic House, Moor Lane,
London EC2Y 9BU.

(1802)

Customer Services Manager

c. £10,000 + Benefits

Swindon, Wiltshire

(Relocation Assistance)

"A computer is only as valuable as the service it provides to its Users. . ."

As a large User installation, with a notable record of achievements to date, we heartily endorse the above statement. Inherent in our attitude towards data processing lies a belief that a management services function exists to provide an effective, efficient and responsible service to all of its Customers.

Naturally, we intend to practice what we preach.

In order to allow for improved response to User requirements, we have recently re-organised our management services function, and in doing so have created a new and important management post. Charged with the specific task of monitoring, advising, and co-ordinating all aspects of the service we provide to Users, the post will be entitled "Customer Services Manager".

The successful Candidate will probably be aged between 30 and 45 and preferably possess an educational standard of Degree or equivalent. Acting as a link between Business Systems and Computer Services, an essential requirement would be a strong professional DP background, probably with a bias towards Analysis or Systems Management. Supervising a small team, the Manager will be responsible for providing an efficient man/machine interface facility which will allow technical considerations and jargon to be converted into language easily understood by non-technical Users. Obviously, when liasing between such diverse areas of activity, particular emphasis must be placed on an ability to establish a credible style of personal communication. Specialist support is available via separate operations and software departments thus allowing the Manager to concentrate on providing an efficient User query service and more importantly to monitor the future business requirements of the Company in order that hardware, software and man-power resources are acquired to meet demand. A specific hardware background is not essential, indeed we would welcome varied experience gained in mainframe and mini computer applications.

We feel that a minimum of 7 years relevant experience would be required in order to provide the level of expertise we desire.

This is a challenging position, eminently suited to a DP Professional who is seeking an opportunity to help direct the future of a major computer installation.

Please forward concise career details to our Advising Consultant, Martin Stainthorpe, at the Birmingham Office or alternatively telephone for an application form on 021-236 3781, please quote reference SW/06/21 in all communications.

All applications will be acknowledged and treated in the utmost confidence. Interviews will be held in London, Birmingham and Manchester in the near future.

SCR

Specialist Computer Recruitment Ltd

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-640 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

(1837)

BIRMINGHAM VACANCIES

SYSTEMS ANALYSTS
£6,258 – Under Review

Three Systems Analysts are required for an expanding team using the latest in ICL hardware and minis.

A Cobol programming background would be preferable with some Accounting or Financial systems experience to be involved in On-Line and Mainframe development applications.

Successful candidates will have a current driving licence as some travel may be required.

REF: 5/625

PROJECT MANAGER
c. £9,000

Our Client is installing the Univac 1100 range of computers at its main centres throughout the U.K. and Univac V77 mini computers at other local operating companies.

A range of new applications is being developed to cover the whole spectrum of the Organisation's business with particular reference to financial systems.

The company requires a PROJECT MANAGER to head up the Group Pensions Scheme application. Experience of the introduction of a major new system should be backed-up by the man-management skills needed to lead a team of professionals. Close liaison with all levels of user management will be involved and therefore good communications skills are essential. Experience of On-Line Systems/Database would be an advantage.

Large company fringe benefits are offered together with relocation expenses where appropriate.

REF: 5/634

SENIOR SYSTEMS ANALYST PROGRAMMER
SENIOR PROGRAMMER ANALYST/PROGRAMMER

SALARIES TO: £7,500 p.a.
+ Overtime + Review Pending

Due to expansion, our Client is looking for a variety of staff for their ICL 2905 installation.

Work to be undertaken will be new Systems Development for both manufacturing and financial systems. On-Line, Real-Time Database techniques.

REF: 5/602-6

BIRMINGHAM VACANCIES

PROGRAMMING TEAM LEADER
GOOD SALARY + CAR SCHEME + BONUS

GEEST MINICOMPUTER SYSTEMS LTD., part of the successful Geest Computer Services Group, backed by the resources of the Geest Organisation have a vacancy for a Programming Team Leader. The successful candidate will have a sound knowledge of Cobol, be flexible, able to control a team of up to eight people and be involved in diverse and interesting development work.

Systems are based on hardware in the forefront of On-Line technology and there is a large mini on site for development.

The salary package is attractive, including a car purchase scheme, bonuses and free health insurance.

VACANCIES ALSO EXIST FOR SENIOR PROGRAMMERS.

REF: 5/626

COMPUTER CENTRE MANAGER
C. £8,000 + Car

Our Client, a leading National Accountancy practice is looking for a mature, professional to run their local Data Centre for both the Practice and its Clients.

The successful candidate will be skilled in Computer Operations using DEC PDP equipment, aged 25+, able to communicate with Clients and Partners and contribute to the efficiency and effectiveness of the centre.

A knowledge of Accountancy procedures and/or commercial applications and BASIC + Programming will be an advantage.

REF: 5/632

PROGRAMMERS! ANALYSTS!
PROJECT LEADERS!

BLACKWOOD ASSOCIATES have a wide range of vacancies for all levels of experienced staff. We are in daily contact with all major companies in this area. We can help you to help yourself to a new, more satisfying and rewarding position.

APPLY NOW!

SYSTEMS DESIGNERS MICROCOMPUTING APPLICATIONS
Scale: £5,537-£7,685 — Under Review

Applications are invited from Systems Designers, Analyst/Programmers and Programmers, ideally with experience in Assembler or Systems Programming for mini and micro computers.

The post will suit a Computer Professional who wishes to acquire or to further develop his/her personal skills and expertise, in using microcomputers for data processing applications.

Training will be given, both externally and in-house. Candidates with substantial computing experience may be appointed at £6,258.

REF: 5/625

BIRMINGHAM VACANCIES

Blackwood Associates
Recruitment Consultants
26 Waterloo Street, Birmingham B2 5TJ.
Telephone: 021-233 2921 (24 hr service)
A Member of the C.P.S. Group of Companies

REVERSE CHARGE CALLS ACCEPTED
WRITE: **BLACKWOOD ASSOCIATES FREEPOST BIRMINGHAM, B2 4BR**
CONSULTANT — **CHRISTINE POUNTNEY**

Development Opportunities – Cambridgeshire

SENIOR PROGRAMMERS £8,000
PROGRAMMERS £7,800

- **NEW COMPUTER CENTRE**
- **IBM HARDWARE**
- **MINICOMPUTER NETWORK**
- **TOP SALARIES**
- **RELOCATION PACKAGE**

Our client, a profitable and growing British organisation, is embarking on an exciting systems development plan and requires additional experienced computer programmers. The new systems will use the latest database techniques in a stimulating environment.

Successful candidates will have exceptional opportunities to develop their careers, whatever their aspirations, from systems analysis to technical support.

There are good general working conditions and company benefits. The area has reasonably priced housing and the Company will reimburse relocation expenses and provide a bridging loan in appropriate cases.

To apply contact Roy Drury by telephone or in writing at the Harrogate office or evening and weekends on Leeds (0532) 826949 to arrange a confidential discussion, quoting reference CW/8065 (Senior Programmers) or CW/8066 (Programmers).

Ivor Norton Management Services Ltd RECRUITMENT CONSULTING DIVISION

LONDON
52, Shaftesbury Avenue,
London W1V 7DE
01 734 8862

HARROGATE
P.O. Box 83, Copthall Tower House,
Harrogate HG1 1TS
Harrogate 66626

GLASGOW
11 Bothwell Street,
Glasgow G2 6LY
041 226 4911

24 HOUR ANSWERING SERVICE
(0423) 55311

CONTRACT OPPORTUNITIES
BIRMINGHAM
PL1 IMS PROGRAMMERS
c £300 per week

LONG OR SHORT TERM CONTRACTS NOW AVAILABLE IMMEDIATELY FOR EXPERIENCED PROFESSIONALS TO WORK WITH OUR CLIENT'S DEVELOPMENT TEAMS ON PRODUCTION AND COMMERCIAL SYSTEMS.

EXPERIENCE OF IMS/DC AND/OR DB IS ESSENTIAL. OPPORTUNITIES ARE AVAILABLE TO ACQUIRE NEW SKILLS WHILST EARNING EXCELLENT MONEY. A START DATE CAN BE ARRANGED TO SUIT YOUR AVAILABILITY, SO EVEN IF YOU ARE NOT AVAILABLE IMMEDIATELY, CONTACT US ANYWAY TO DISCUSS THESE AND ANY OTHER EXCITING OPPORTUNITIES.

We've produced a guide to contract work just for you, pointing out all the things you have to know. Phone now for a copy of this special problem solving leaflet. All you need to know about going contract the Knight Programming way.

Phone now for more information, an informal interview or meeting for this very special opportunity.
RING Manchester (24hours) Birmingham (24hours)

Knight Programming Support Ltd., Adamson House, Shambles Square, Manchester M1 6RD and Kensington House, Suffolk Street Queensway, Birmingham B1

London Manchester Birmingham Paris Amsterdam and New York

Knight Programming Security Deal

1. All dealings are treated in absolute confidence.
2. All meetings are completely informal where and when you want them.
3. Full expenses for all meetings will be paid.
4. Company accountant available to give full confidential advice about tax, mortgage arrangements, insurance and pensions.
5. We offer you continuous work giving you security of employment.
6. Accommodation guidance available.

Ring and ask for our leaflet explaining all about going contract the Knight Programming way.

Programmer/ Analyst

Apply your expertise to Research and Development

Starting salary in the region of £8,000

Slough, Berks.

Increasing use is being made of computer techniques in our Research and Development Laboratories in such areas as resin research, paint formulation and evaluation, and colour matching, as well as in support of production. So for a Programmer/Analyst looking for new areas in which to apply and extend his or her knowledge, this is an unusually interesting opening.

We have a PDP-11/34 computer operating under RSX-11M with several time-sharing terminals and linked spectrophotometers. Assisted by a junior Programmer you would be responsible for satisfying the off-line technical computing needs of a large group of scientific staff.

This is a key position in a rapidly expanding area of computing and calls for programming experience with Fortran IV, 'A' level or equivalent in numerate subjects, considerable self-reliance, problem solving ability and a willingness to work closely with technical staff in the implementation of computer methods.

An attractive range of benefits will be offered including assistance with relocation expenses, where appropriate.

Please write to or phone Brenda Taylor for an application form at:

ICI Paints Division

Imperial Chemical Industries Limited
Paints Division Wexham Road
Slough SL2 5DS Tel: Slough 31151

(1811)

DISTRIBUTED SYSTEMS LIMITED

RECRUITMENT DIVISION

PERMANENT

ANALYST/PROGS	IBM System 3/32/34 RPG2. 2 years' exp. — Int. position	G. Lond. & South
PROGRAMMERS	Interesting Banks Project, suit Graduates with Mini experience, Perks	C. London
ANALYST/PROG	IBM System 3/32/34 RPG2. Min. 2 years' experience	Hants
PROGRAMMER	Redifon Validator/Editor experience essential, Banks perks	C. London
PROGRAMMER	Grad. with 2 years' Prog. exp. as Trainee Analyst for Bank Database	C. London
PROGRAMMER	Exp. in Assembler on small machines essential	Gr. London
PROGRAMMERS	NCR NEAT/3 & COBOL for Int. on-line projects Bank, Perks	C. London
ANALYST	Demonstrable exp. of Database Systems, Bank	C. London
PROGRAMMER	Experienced COBOL, Burroughs an advantage	Sussex
ANALYST/PROG. OR PROGS.	Min. 2 yrs. exp. IBM370. COBOL preferred. Fin. Org.	Yorks.

CONTRACTS

ANALYSTS/ PROGS.	NCR Century, COBOL & NEAT/3 Min. 3 yrs. exp.	Utd. States
ANALYST/PROG	Hewlett Packard COBOL/BASIC. Prev. exp. reqd.	Gr. London
ANALYST/PROG	FORTRAN (Univac and Commercial exp. preferred)	Home Counties
PROGRAMMER	FORTRAN with Actuarial exp. essential	South
PROGRAMMER	ICL System 34 COBOL min. 2 yrs. experience	London/South
PROGRAMMER	IBM 4300 COBOL min. 2 yrs. experience	London/South
ANALYST	MIS. Broking essential IBM M'frame exp. an advantage	Gr. London
ANALYST/PROG	BASIC & RSTS min. 3 yrs. exp.	Gr. London
ANALYST/PROG	Honeywell 64 COBOL exp. of TDS an advantage	C. London
PROGRAMMER	DG NOVA RD OS Programmer	C. London

PLEASE ASK FOR DAVE PALMER OR JIM HOWLEY

DSL

70 Borough High Street, London SE1 1XF
Tel: 01-403 3456 1568 24-Hour Answerphone

(1884)

SR. SYSTEMS ANALYSTS — LONDON — to £10,000
Must have developed one medium to large system. Bill

CHIEF PROGRAMMER — N. LONDON — to £8,500
2903/4 experience with COBOL and EXEC. Peter

SYSTEMS ANALYSTS — LONDON — to £9,000
Be able to communicate at all levels. Bill

TRAINEE ANALYSTS — LONDON — c. £8,000
Senior Programmers or Programmer/Analysts will be re-trained. Peter

PROGRAMMERS — LONDON — c. £7,400
Two years' experience in Assembler or PL1. Bill

COBOL PROGRAMMERS — LONDON & S.E. — to £8,000
18 months' min. COBOL experience. Jobs on Mainframes and Minis. Peter

SALESMAN — BERKS — O.T.E. £10,000 + car
Sell hardware for an international company.

FORTRAN ANALYST/PROGRAMMERS — LONDON — to £8,500
Well-educated, motivated people to work for major U.K. Co. Peter

FOR MORE INFORMATION ON THESE AND OTHER VACANCIES TELEPHONE:

01-839 6057
Peter Barson or
Bill Taylor

Barson, Taylor & Ward
Computer Personnel Consultants
107 Jermyn Street, London SW1Y 6EE

BARSON TAYLOR & WARD

المؤسسة العامة القطرية للبترول

QATAR GENERAL PETROLEUM CORPORATION

QGPC

OUTSTANDING DP OPPORTUNITIES IN A NEW COMPUTER INSTALLATION IN THE MIDDLE EAST

QGPC established by the State of Qatar with a Share Capital of QR.3 billions ($800 million) has the responsibility for Petroleum and other related industries in the State. The Corporation is setting up an Information and Computing Centre to provide computing services to QGPC and its subsidiaries in both Finance/Administration and Engineering areas.

We are looking for Computer professionals for the following posts:

SYSTEMS DEVELOPMENT MANAGER

To lead a systems and programming team responsible for design and implementation, maintenance and support of new and existing Financial/Administrative systems.
Applicants must have gone through programmer/analyst/project leader career progression spanning at least nine years and must have significant experience in the management and costing of systems implementation.

SYSTEMS ANALYSTS

These positions require a minimum of four years' systems and two years' programming experience in the area of Finance/Administrative applications ideally obtained in an IBM DOS COBOL environment and must have controlled at least one major project through to implementation.

ANALYST PROGRAMMERS AND PROGRAMMERS

A minimum of three years' commercial IBM 370 DOS/VS COBOL experience is required and for Analyst programmers an additional one year of systems analysis and design.

SENIOR SYSTEMS PROGRAMMER

Applicants must have at least five years' IBM DOS/VS systems programming experience. CICS, POWER and LIBRARIAN experience is highly desirable.
Person appointed will be responsible for implementation support and maintenance of operating systems software.
For all above posts minimum requirement is a University Degree or equivalent, proficiency in English is essential. A second language (Arabic or French) would be an advantage.

WE OFFER

— Competitive salaries. No local income tax.
— Free furnished air-conditioned accommodation.
— Electricity and water are provided at no cost.
— Interest free car loan plus car allowance.
— Air tickets to country of domicile for employee, wife and up to three children.
— Free state medical services.
— Contributory life and accident insurance.
— End of service benefits.

Applications, listing name, address, qualifications, experience to date, previous employers and positions held, present employer, salary, position and expected salary as well as any other relevant information should be sent to:

**Personnel and Training Manager
QGPC
P.O. Box 3212
Doha — Qatar
Arabian Gulf**

All applications will be dealt with promptly and in strict confidence.

RSX11M SYSTEM PROGRAMMER

up to £10,000 p.a. plus valuable benefits

your location CROYDON SURREY

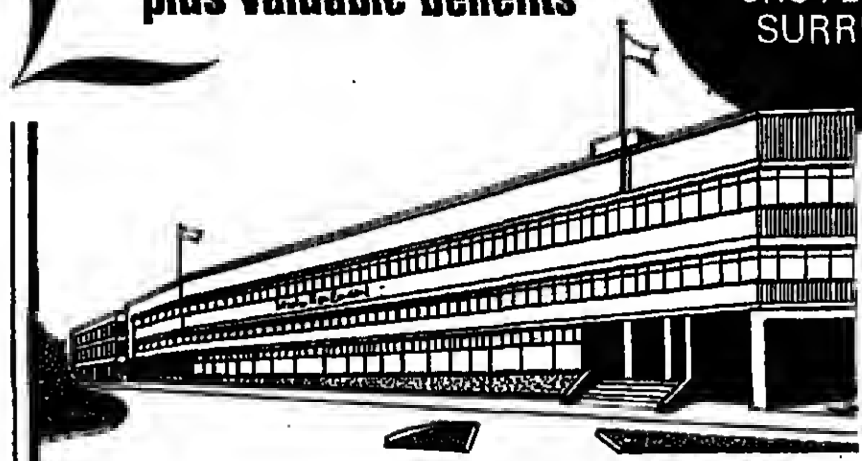
LOMBARD NORTH CENTRAL LIMITED is one of the largest finance companies in the country and is part of the National Westminster Bank Group. A high growth rate has been achieved within the last few years supported by significant DP developments.
The Technical Services Section of the Computer Services Department now requires an additional RSX11M System Programmer. He or she will have practical experience of RSX11M and MACRO 11.
A knowledge of DECNET would be an advantage.

The current configuration includes several remote PDP 11/34's which capture regional data for transmission to duplex PDP 11/70's. These in turn communicate directly via DX11's with a 4MB IBM 3031. The SERIES IV package is used as the basis of the data preparation software on the PDP network but all linkage and ancillary software is being developed in-house.

The post offers exceptional opportunities for personal growth in a professional environment.

Lombard North Central Limited

BENEFITS offered include non-contributory pension scheme, 24 days holiday, subsidised lunches, sports and social club, and after a short qualifying period low interest mortgage and loan facilities plus profit sharing.



Apply now by telephoning Richard Morley on 01-638 0036 or send a brief C.V. to:
DILOG LIMITED Throgmorton House 15 Copthall Avenue London EC2M 5TP.

dilog

professionals seeking professionals

(1799)

Field Service Engineer

–An opportunity to specialise.

c.£9,000 + car

Hertfordshire based

Having performed effectively as a Field Service Engineer, you may be wondering what the next career progression step should be.

Consider this.......

We are offering an opportunity of becoming a specialist in the area of communications products;
– gaining a much deeper technical knowledge
– an involvement with software, as well as hardware
– a 3rd level support function

Combine these points with the fact that we are an expanding organisation, are constantly introducing new ranges, and are part of one of the world's largest and most respected group of companies, and we doubt you'll be able to better the prospects anywhere in the industry today.

The successful applicant should possess, in addition to a computing background, the presence and personality necessary to represent an organisation at the highest level of customer contact. In return you will receive a degree of independence and flexibility not normally associated with such a role, and a job content second to none.

Suitably qualified applicants should, in the first instance, contact Andy Carter on 01-935 0671, or St. Albans 35033 evenings and weekends, when interviews will be arranged at your convenience and our expense.

SCR

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3761 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-640 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

Specialist Computer Recruitment Ltd

BLACKWOOD ASSOCIATES GOES NATIONWIDE

C £5,200 — **PROGRAMMERS** — **BIRMINGHAM**
Six months COBOL for commercial bureau. Real Time, On Line development work on minis. 5/829

To £7,000 — **ANALYST/PROGRAMMER** — **BIRMINGHAM**
12 months+ COBOL. Commercial applications. Client contact, with possible Sales Support role. 5/630

To £7,000 — **PROGRAMMER** — **BIRMINGHAM**
Two years+ Assembler experience to work for a Bureau using mainframes and minis. 5/631

£7,000+ CAR — **OPERATIONS MANAGER** — **BIRMINGHAM**
Operations experience using PDP and Systems Mini Computers. To supervise two operators. Day shift only. 5/632

C £8,500 — **PROGRAMMER** — **WORCS**
Three years IBM, CICS expurience, DOS preferebly or PL1 or COBOL. IBM installation. W257

Up to £7,500 — **SENIOR ANALYST** — **WEST COUNTRY**
Three years experience as an analyst. Manufacturing/Commercial/Financial applications. W2B1

Up to £6,000 — **PROGRAMMERS** — **CHELTENHAM**
Two/three years COBOL experience, preferably some design experience. IBM. Bureau environment. W26B

C £7,500 — **ANALYST** — **GLOUCS**
One-two years experience. IBM Installation. Mortgage assistance. W27B

£Negotiable — **PROGRAMMER** — **BEDFORD**
Two years COBOL programming experience. Commercial applications. EM81B

C £7,000 — **PROGRAMMER** — **SOUTH WARKS**
Two years IBM COBOL programming experience. Interested in becoming involved in system software. Manufacturing environment. EM814

£Negotiable — **PROGRAMMER** — **PETERBOROUGH**
One-two years IBM Assembler programming experience. To assist in developing new systems. EM812

£6,000+ CAR — **PROGRAMMER** — **CAMBRIDGE**
Two/three years COBOL programming experience. Commercial/scientific applications. EM820

£5/6K — **PROGRAMMER** — **SHEFFIELD**
Minimum four years experience including 12 months on line. Ideally Honeywell knowledge with TDS and IDS. C402

C £7,000 — **ANALYSTS** — **LEICESTERSHIRE**
Preferably with experience of System 1D with COBOL or Assembler. Software house. C418

£5,500 to £6,000+ BENEFITS — **PROGRAMMER** — **LEEDS**
At least three years Assembler programming experience, ideally with knowledge of CICS/VS and OSV1., Financial environment. C433

Up to £9K — **PROGRAMMER** — **NOTTINGHAM**
Three years COBOL programming experience and experience in developing major systems. C436

£6,500 — **APPLICATIONS PROGRAMMER** — **WEST MIDLANDS**
Interesting and wide ranging applications, on line, interactive systems development. COBOL essential, PLAN, Filetab useful. B903

£7,500+ — **SYSTEMS PROJECT LEADER** — **NORTH BIRMINGHAM**
A broad knowledge of financial systems is required. The company policy is for distributed processing to be developed using package systems wherever possible. CS5062

£7,000+ — **SYSTEMS ANALYST** — **SMETHWICK**
Broad based systems experience with a programming background for on line manufacturing and commercial applications. B918

£6,000 — **PROGRAMMER** — **WEST BROMWICH**
Minimum two years IBM COBOL experience, Detebase and Real Time experience advantegeous. B921

Blackwood Associates
Recruitment Consultants
26 Waterloo Street, Birmingham B2 5TJ.
Telephone: 021-233 2921 (24 hr. service)
A Member of the CPS Group of Companies.

INTERVIEWS ANY TIME BETWEEN 9 a.m.–5.30 p.m. EVENINGS AND WEEKENDS BY APPOINTMENT
REVERSE CHARGE CALLS ACCEPTED
WRITE – BLACKWOOD ASSOCIATES, FREEPOST, BIRMINGHAM B2 4BR

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

Go banking in KUWAIT

IBM SYSTEMS PROGRAMMER

WE ARE the oldest bank in Kuweit with 12 branches. We have embarked on an eggressive progrem to increese our market share.

Our current IBM 370 is being upgraded to an IBM 4331 for delivery late 1980 end a 4341 is also on order. We are planning to install e terminel system for ell our branches.

This new IBM 3600 Teller Terminel system will be developed as en on-line system.

EXPANSION has created e vitel vacancy for e SYSTEMS PROGRAMMER.

Candidates must be good technicians with sound Assembler background. A minimum of three years' experience of IBM DOS/VS, POWER/VS end CICS is required. Knowledge of VTAM would be en advantage.

Candidates will be expected to be able to deal easily with people of other cultures.

BENEFITS are excellent and include e good basic salary, TAX FREE. Guaranteed ANNUAL BONUS of 15%. FREE FURNISHED FAMILY ACCOMMODATION, INTEREST-FREE CAR PURCHASE LOAN end FREE LOCAL SCHOOLING for any children.

RING Terry Bate for an early interview on 01-637 9611.

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

MYRIAD

SYSTEMS CONSULTANTS HARDWARE AND SOFTWARE

BERKSHIRE — **CIRCA £10,500**

A number of outstanding opportunities have arisen for both SOFTWARE and HARDWARE consultants as a result of the increasing demands being placed upon our client's System Reliability and Usability Departments.

Our client can offer you the opportunity to direct the development of future Hardware and Software in the key fields of:

★ **USABILITY ENGINEERING**
★ **RELIABILITY ENGINEERING**

with Key responsibility for:

★ **DEFINING DEVELOPMENT OBJECTIVES**
★ **COMPETITIVE EVALUATION**
★ **OPERATIONAL ANALYSIS**

To meet the challenge that these positions offer, applicants must have a successful record, and substantial experience matching one of the following profiles.

SOFTWARE
★ **SYSTEMS SOFTWARE DESIGN**
★ **OPERATING SYSTEMS**
★ **SYSTEM MODELLING**

HARDWARE
★ **MAINFRAME DESIGN ENGINEERING**
★ **LOGIC DESIGN**
★ **SYSTEMS ORIENTATION**

Conditions of employment are excellent and good commencing salaries are enhanced by first-class career prospects and fringe benefits. A generous relocation package is available where appropriate.

Ref. SW1/0307/CW

MYRIAD APPOINTMENTS LIMITED
10 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

PROJECT MANAGER

LONDON W1.
SALARY:— NEGOTIABLE

We are one of Britain's foremost produce importation and distribution companies, with subsidiary interests in horticulture and related activities. This involves the control of a world-wide shipping fleet, 60 distribution and marketing centres throughout the United Kingdom and all associated support requirements.

Our business is growing fast. To ensure efficient management of these concerns, the central data processing facility must design and implement systems in the following highly diverse areas;

- ☐ **Produce distribution and marketing**
- ☐ **Marine scheduling and optimisation**
- ☐ **Ship maintenance planning and organisation**
- ☐ **Analysis of produce quality and source**
- ☐ **Profitability analysis**
- ☐ **Financial analysis/budgetry control**

To meet the growing needs of the group, the central computer is being replaced by an IBM 4300. Additionally, most of the remote locations require their own computing power, with communications links to the head office machine.
We require a Project Manager who will be responsible for the design and implementation of these systems. Three years solid analysis experience, with a programming background, are essential requirements. The position is most likely to attract those currently earning £7,000 – £9,000 who have a desire to work for a company committed to extensive computerisation.

For further information, and to arrange interviews, please telephone or write to The Data Processing Manager

Howard Beale Fyffes Group Ltd
15 Stratton Street London W1A 2LL

Telephone No. 01-499 3411 Ext 90
or 01-467 2038 Evenings + Weekends.

Fyffes

Special Editorial Feature – July 24 Issue

COMPUTER WEEKLY — Britain's largest circulated computer publication — will publish a special editorial feature in the July 24 issue designed to outline the career opportunities for fully qualified and experienced data processing personnel in HOLLAND's expanding computer industry.

The current international shortage of data processing staff is likely to remain a problem for the foreseeable future becoming increasingly acute with the growth of computer installations. The prime objective of this feature will be to create a greater awareness amongst readers of COMPUTER WEEKLY of the scope and job opportunities available in Holland.

COMPUTER WEEKLY has an average circulation of 91,686 (ABC July-Dec 1979) the largest of any other computer publication in the UK. Readership extends to all sections of the industry particularly amongst Data Processing Managers, Systems Analysts, Computer Programmers, Operations Staff and Sales Representatives.

If you are currently looking for permanent or contract staff why not take advantage of this special feature and advertise your requirements to the U.K. market place through COMPUTER WEEKLY. A special section titled: *"Career opportunities in Holland"* will be included in the issue drawing attention to your announcement.

Advertisements can be accepted up until July 18 although advanced space reservations are advisable. Rates are based on £16 per single column centimetre. COMPUTER WEEKLY is printed litho process therefore no blocks are required. There are seven columns to each page measuring 39cms long. 1 col width = 39mm, 2 = 82mm, 3 = 125mm, 4 = 168mm, 5 = 211mm, 6 = 254mm, 7 = 296mm.

Should you require any further details or would like to see a copy of COMPUTER WEEKLY contact our recruitment advertisement division today.

COMPUTER WEEKLY

THE NEWSPAPER COMPUTER PEOPLE RELY ON.

COMPUTER WEEKLY, Dorset House, Stamford Street, London SE1 9LU, England. Tel: 01-261 8028/8019/8174/8097. Telex: 25137 BISPUB G.

OCC

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

OCC Computer Personnel Ltd
16 Bedford Row London WC1R 4EB
Telephone 01-242 9356 Telex 268652
also at
4 Church Lane Nantwich Cheshire CW5 5RQ

Systems Analysts Mk. IV Programmer and Analyst Programmers
Salary range £11K-£16K after tax, client interviews 13th and 14th July

A major client of ours operating in the Eastern Province of Saudi Arabia has a number of vacancies in their E.D.P. Dept. The company has large IBM equipment installed and candidates should be familiar with both IBM hardware and software. You will ideally be educated to degree standard and have a number of years' experience in the position you apply for.

Systems Analysts —Commercial and Industrial

Five vacancies exist for Business Analysts. Applications include: medical services, personnel, purchasing and materials. Familiarity with Database and T.P. concepts will be advantageous. A Systems Analyst is also required for pipeline network analysis and simulation. General engineering applications have a further vacancy and here we are looking for an Analyst with experience of FORTRAN and/or PL/1. Software used includes: COGO, ROADS and STRUDL.

Business Analyst Programmers

Five Analyst/Programmers are also required and you should have three or more years' experience programming in PL/1 and/or COBOL. You should also have worked on Database and T.P. Systems concerned with business applications.

Mk. IV Programmer—for loss analysis

If you are a qualified Mk. IV Programmer, we would like to hear from you. Our client needs somebody to work on loss analysis and is prepared to train you in loss analysis. However, if you have this sort of experience it will be to your advantage.

All successful candidates will be offered one year (renewable) contracts on a single status basis, but married personnel will be entitled to return leave every four months. The organisation also provides: excellent recreational facilities and gives free medical care, heavily subsidised accommodation, generous leave allowance.

To find out more or make an application, please telephone Mike Mead on 01-242 9356 (days) or 01-807 7428 (evenings/weekends). Unfortunately time does not allow for written applications to be considered.

INSTRUMENT SERVICE TECHNICIANS
COMPUTER SERVICE ENGINEERS
MIDDLE EAST

£25,000 to £30,000+overtime

- for a two year, tax free contract
- Food & accommodation provided
- Medicare & insurance
- Product training in UK or USA
- 50 days paid UK leave per year with multiple air fares
- employment continuity

Our client manufactures, installs, commissions and maintains process control instrumentation and advanced process computer systems.

We are seeking technicians and engineers qualified to C & G and HNC level with a minimum of 3 years industrial experience in the following:

ANALOGUE INSTRUMENTATION
DIGITAL INSTRUMENTATION
DIGITAL PROCESS COMPUTERS

After product training you will be assigned as customer service engineers. These positions are single status only. You must be medically fit. Interviews are planned from July 9th.

C.V.s to, or telephone for application form quoting ref. 9922/DM to John Nicholson, Astral Recruitment Associates, Astral House, 17/19 Maddox Street, London W1R 0EY. Tel: 01-629 2357/8.

ARA Astral Recruitment Associates
Search Selection Recruitment Advertising

UMIST

Applications are invited from candidates of either sex for the following posts which will support the research activities of the recently appointed Professor of Applied Control Engineering:

EXPERIMENTAL OFFICER

REF: CSC/114/CJ. This post will be concerned with the development and deployment of equipment for research in the areas of adaptive control, intelligent control systems, pattern recognition and allied topics which rely upon a high degree of mini and micro-computing technology.

Salary will be on the scale £4402-£7410 per annum.

RESEARCH ASSISTANT

REF: CSC/115/CJ. This post will be concerned with the development of a comprehensive set of on-line computer-aided control-systems design facilities.

Salary will be on the range £4402-£5062 per annum.

In both cases, an interest in the hardware and software aspects of digital computing equipment would be valuable.

Details for application forms and further particulars, quoting the appropriate reference, should be addressed to the Registrar, Room 5.0, UMIST, PO Box 88, Manchester M60 1QD. The closing date is the 31st July, 1980. (1629)

UMIST

DATA COMMUNICATIONS

Quality Control Engineers

UP TO £8,500

IAL is at the forefront of the developing data communications market, producing and selling increasingly advanced systems throughout the world. Engineers are required to develop programmes and procedures for ATE in the Quality Control Department.

As part of a highly motivated and experienced team you would be required to formulate test programmes and procedures for the testing of our new Data Communications Control Systems.

Fault diagnosis on Microprocessor based circuitry is an essential part of this job.

You should have a minimum of 3 years' experience in the appropriate field coupled with a technical qualification to HNC level.

Benefits include relocation expenses where necessary, 4 weeks holiday plus bonus, company restaurant, social club and pension scheme and a salary dependent upon experience and qualifications.

To apply, please contact Sue Dillon, IAL, Aeradio House, Hayes Road, Southall, Middx. Tel: 01-574 5134.

Please quote ref: K/212.

(1871)

IAL THE HIGH TECHNOLOGY TASK FORCE
COMMUNICATIONS SYSTEMS
COMPUTER SYSTEMS AND SERVICES
AVIATION SYSTEMS AND SERVICES - WORLDWIDE

DP MANAGER
C. LONDON to £8,500 + CAR
2 x NCR 8200

An excellent opportunity has arisen for someone to take charge of a small but extremely busy twin NCR8200 installation in Central London, which provides vital aid to the management of a major importer. Both the Company and the installation have a substantial and continuing growth pattern, and the person appointed must be a lively and creative manager who enjoys being totally involved. There are six operations staff and the majority of systems and programs are written externally, but at times the manager will need to work personally in all these areas.

If you have these skills and are full of vitality and enthusiasm, call Clive Williamson NOW for further details and an application form.

COMPUTER and MANAGEMENT PERSONNEL
73 Little Britain, London, E.C.1.
Tel: 01-606 8500 (24 hour service)

COMPUTER WEEKLY CLASSIFIED
01 261 8028/8097/8019
the newspaper computer people rely on

COBOL PROGRAMMER

IRELAND MID-WEST c. £7000

One of Ireland's largest Farmers' Co-operatives who are involved in Dairy and Agricultural Engineering currently require an experienced Programmer.

The suitable candidate will have a minimum of 3 years' Cobol Programming in a commercial environment. Systems are DEC 2020 Base using TOPS 20 operating systems. The appointed applicant will be expected to undertake considerable responsibilities becoming involved with all aspects concerning the Data Processing Group.

This is an opportunity with sound career prospects. You will feel very much at home in a creative and friendly working environment.

An attractive relocation package can be negotiated where necessary and all the normal benefits associated with a company of this status can be expected.

For further details please contact Eddie Howard on 01-339 9183 (London) or Gerry McEvoy on Charleville (Co. Cork) 501.

AVIONICS — SCIENTIFIC PROGRAMMERS

LONDON/HOME COUNTIES/SOUTH
SALARIES £6,000-£12,000

We have a large number of openings for people with scientific or avionics expertise. These opportunities are wide and varied and some involve a proportion of overseas travel. Candidates should hold a degree in a scientific discipline and have experience in some of the following areas:

SOFTWARE DESIGN ★ REAL TIME MINI/MICRO SYSTEMS ★ AVIONICS & DEFENCE SYSTEMS ★ ASSEMBLY LEVEL LANGUAGES ★ FLIGHT SIMULATION ★ MATHEMATICAL MODELLING.

These appointments are placed throughout the above locations and all are with reputable established companies.

For further details please contact Mike Howard.

SYSTEMS ENGINEERS

for Process Control Computer Systems HERTFORDSHIRE

To design, engineer and implement any sophisticated minicomputer-based systems requires engineering expertise, creative team effort and state of the art technology. This formula points towards the continued success of our client, part of an international concern.

As a small but growing organisation they now have an opportunity for two young professional systems engineers to join them in a project engineering capacity. You will be involved at all stages from receipt of an order through to final systems acceptance on site. Ideally with a degree in electronics or a related subject, you should already have to your credit some digital systems engineering experience. A knowledge of DEC equipment and/or fundamental systems test programming would be a distinct advantage. You must be able to work efficiently as part of a team.

Our client is also looking for a willingness to travel and work on site as these positions offer the scope for some travel both UK and overseas. The organisation is small but growing and career development prospects for talented individuals are outstanding.

For further details please contact Eddie Howard.

Edmund Howard & Partners

5 Brighton Road, Surbiton, Surrey, England. Tel - 01 399 9183

Programmers/Systems Analysts

The Australian High Commission has a range of vacancies for computer personnel ranging from junior programmer responsible for a variety of program maintenance tasks, to senior systems analyst responsible for devising new systems and leading a small team of analyst/programmers in seeing projects right through to a fully documented production system.

The High Commission possesses an IBM 370/138 operating under Power/Dos/VS. Programming is in COBOL. Currently systems are developed in batch mode, however new developments indicate that we may soon be able to consider on-line applications using CICS.

If you are interested in joining a small hard-working team and feel you have something to offer us then we should be pleased to receive your application.

Salaries are in the ranges £7526 to £8226 and £8700 to £10120. Other benefits include pension scheme, 4 weeks' annual leave, British and Australian public holidays (13 days a year in all), flextime, social club and other amenities.

Applications to Recruitment Officer, Australian High Commission, Australia House, Strand, London WC2B 4LA. (1825)

STOCK MARKET CONSULTANT
NEW YORK CONTRACT
01 606 8900 (day)
0604 711209 (evening and weekends)

CONTRACT REQUIREMENT
ANALYST/PROGRAMMER
with Univac 1180 Cobol under OS2000. Experience of DMS 110 also required as is Financial Book-keeping. To work in SWITZERLAND — 6 months commencing August.
Please contact Daphne Jones — Force 8 Computer Services — 01-680 3761.

FORCE 8 Computer services
8 Mint Walk Croydon 01-680 3761

CONTRACT

OS COBOL PROGRAMMERS
ANALYSTS + OS COBOL
DOS/OS PL1 ASSEMBLER PROGRAMMER
OS ASSEMBLER PROGRAMMER
PROGRAMMER with DATA MAN
OS COBOL/JACKSON TECHNIQUES PROGRAMMERS
DOS/VS COBOL PROGRAMMERS
COBOL AND PL1 PROGRAMMERS
COBOL PROGRAMMER with DATA GENERAL
HONEYWELL LEVEL 62 COBOL PROGRAMMERS

WE WILL OFFER YOU
* A personal health scheme covering sickness for 6 months
* Regular and prompt payment
* Tax guidance service
* A professional attitude towards YOUR requirements

For further information please contact:
Mike Burton or Peter Edwards at

DIRECT PROGRAMMING SERVICES
51 LONG LANE, WEST SMITHFIELD, LONDON EC1
Tel: 01-606 1738/1739/1730
(24-hr service)

Licence No SE(A)308

SYSTEMS ANALYST

c£9,000 (under review) King's Cross

The Institute is currently developing a major examination processing system. Programming is in COBOL using a ... based IBM 3032 operating under OS/MVS and in BASIC ... using our in-house PDP 11/34 operating under RSX 11M.

The analyst should have at least 2 years' experience, primarily on IBM equipment, and have been involved in all aspects of development from investigation to implementation. ... knowledge of N.C.C. system standards (or similar) preferred.

Benefits include 24 days' leave, a generously subsidised restaurant, free tea and coffee, travel loans, ... membership and flexibility of working hours (nominally ... a.m.-5 p.m.).

If you'd like to know more, contact Keith ..., Personnel Officer, for further particulars and application form on 01-278 2468 or write to 46 Britannia Street, London WC1X 9RG.

City+Guilds

CONTRACT REQUIREMENT
SYSTEMS PROGRAMMER FOR IBM 4341
Preferably experienced with DOS/VSE although DOS/VS would be considered. DL/1 and CICS a must to work on this System Generation project in SWITZERLAND. Knowledge of German an asset.
Please contact Daphne Jones, Force 8 Computer Services, 01-680 3761.

FORCE 8 Computer services
8 Mint Walk Croydon 01-680 3761

COMMAND + CONTROL

Crowthorne 77921 ... 3370 day
Farnborough (Hants) 46063 eve./wknd

HOLLAND VIA I.A.

Industrial Artists has more challenging and rewarding staff positions on offer:

ANALYST/PROGRAMMERS with a good knowledge of **COBOL** are required, for a variety of commercial projects with particular emphasis on freight forwarding and general shipping systems.
Hardware comprises **IBM 370/168 Amdahl V7 and 3000 Series**. Operating under **OS/VS 1/2, DOS/VSE** controlled by **VM 370**.

SYSTEMS ENGINEERS with communications software experience are required for group management positions within a large software development division.
Experience of communications driver utilities, together with a good overall hardware/software appreciation.
Preferred applicants will possess an accredited academic qualification in computer science, control engineering or similar subject.

GRADUATES with a minimum degree in computer science or similar subject who wish to join a software development team, with an International Computer Manufacturing Company, are invited to submit their curriculum vitae for consideration. An outline of source material studied will assist in our evaluations.

COBOL PROGRAMMERS to work on a major conversion project are required for immediate assignments.
A variety of systems are currently being converted to run on **IBM 4000 Series** hardware, operating under **DOS/VSE**.
Special conversion tools utilise **IBM 370/158** hardware running under **OS/VS1**.

COMPUTER OPERATORS with experience of **IBM 370** and **303X Series** systems are required for various locations.

We would like to hear from **ANALYST/PROGRAMMERS** with direct experience of computer typesetting systems, applicants should also have a knowledge of **DEC/PDP 11** hardware, operating under **RSX 11/M**.

TECHNICAL AUTHOR, basically electronics with some digital hardware and software knowledge essential. Experience of medical instrumentation advantageous but not mandatory.

Excellent salaries are on offer, including generous concessions already negotiated with the Dutch taxation authority, four weeks' paid holiday per annum, paid national holidays and certified sick-time, a holiday bonus, plus the full support of the administrative staffs based in our Dutch offices.

SO PLEASE WRITE OR TELEPHONE NOW:
Ann Arlidge,
Marketing and Recruitment Director,
Industrial Artists (Hitchin) Limited
21 Bancroft, Hitchin,
Herts SG5 1JW
Tel: (0462) 52741/2/3 or (0462) 700701 (Eve/Weekends)

IA is a registered Employment Business licensed by D of E.

CLASSIFIED COPY

All classified copy should reach our offices no later than 3.30 p.m. on the Monday preceding Thursday's publication.
If complete artwork is supplied, 11 a.m. on a Tuesday.
Ring Ray Kelly for further details on 01-261 8019.

CHIEF PROGRAMMER

Brighton **£ Negotiable**
This is a management post for someone with sound experience in an IBM 370 DOS-VS environment to join a progressive DP dept. You must have at least 4 years' programming experience with technical training in JCL. Excellent prospects.

PROGRAMMERS ANALYSTS/PROGRAMMERS

West of London **£8,000-£10,000**
Thorn/EMI
Several positions are available for Programmers and Analyst Programmers with a large organisation using mainframe and mini computers. Applicants must have 1 to 4 years' COBOL programming.

SYSTEMS ENGINEERS

West Surrey **C. £8,500**
Marconi Frimley
Several vacancies exist for Engineers to work on projects involving computer simulation, systems modelling and new design concepts.

PROGRAMMERS (Engineering applications)

West Surrey **C. £7,800**
To support and test engineering software programs. Applicants should have a degree in Maths/Computer Science. Knowledge of ASSEMBLER, high level languages and the ability to translate engineers' requirements into software form.

These are but a few of the vacancies we have. If you wish to apply for any of the above position, please send us your full CV, or phone for an application form.

AMES PERSONNEL (1054)
Employment Agency Suite 14, Dryden Chambers
119 Oxford Street, London W1R 1PA Tel 01 434 1106

PHILIP MORRIS LIMITED is a successful international packaged goods company, whose products include such brand leaders as Marlboro and Chesterfield cigarettes, Seven-Up and Miller Beer, with a fast-growing company in the U.K. Presently located at Brentford, but relocating to Feltham, Middx. in July.

SENIOR COMPUTER PROGRAMMER

Ideally with at least 3 years' IBM mainframe operating experience and a knowledge of DOS/VS(E) on an IBM 370 with a working knowledge of JCL.

Duties will include the provision of a comprehensive support function for development and users of the IBM 4331 and implementation of in-house European operating standards and procedures.

COMPUTER PROGRAMMER

Applicants must have at least 2 years' experience of COBOL and CICS on IBM mainframes, and the ability to specify and code computer programmes for specialised systems in particular on-line interactive programmes.

These are new positions within our rapidly expanding Computer department that will shortly install an IBM 4331.

We offer excellent salaries plus the usual benefits associated with a major group including private medicare scheme and relocation expenses where necessary.

For further information applicants, male/female, should apply in writing enclosing details of career to date, or telephone:
George Vale, Personnel Manager
Philip Morris Limited, Great West House
Great West Road Brentford, Middx.
Tel: 01-568 4191

Philip Morris

WYRE FOREST DISTRICT COUNCIL
Directorate of Finance

SYSTEMS ANALYST/PROGRAMMERS

(TWO)
Salary SO.1/2 — £6636-£7722
(Pay award due 1.7.80)

Two systems analyst/programmers are required to accelerate development on the council's recently installed C.M.C. Reality/C.M.C. 5200 computer system at its finance department in Kidderminster.

Although responsible to the Systems and Programming Manager there will be ample opportunity to display initiative in the development of particular systems and these are ideal openings for individuals wishing to take an important role in the setting up of a comprehensive computer service. The main programming language in use is Data/Basic and, although knowledge of this language is not essential, applicants should have a minimum of two years' analysis and programming experience.

The district is situated in North Worcestershire, close to the motorway system and Birmingham and Worcester and contains many areas of considerable natural beauty. It serves a population of 93,000 and comprises the towns of Kidderminster, Stourport-on-Severn and Bewdley.

The council offers a generous scheme of financial assistance including reimbursement of removal expenses, all legal expenses arising from house sale and purchase. Temporary housing accommodation/mortgage facilities may be available. Casual user car allowance payable.

If you are interested and wish to discuss the appointment informally, please telephone Iain Wright, Systems and Programming Manager, on Kidderminster (0562) 66351 Ext. 10.

Further particulars and application forms returnable by 21st July, 1980, from Personnel Officer, Civic Centre, Stourport-on-Severn, Worcs. Tel. Stourport 77211, Ext. 32. Interviews will be held on Monday, July 28, 1980.

THE SALES BIT

Overcoming age prejudice

AS I am sure most readers have known for a long time, I work for a company called Sales and Marketing Recruiters. This brings me into regular contact with salesmen of all types and levels of experience, and my job is to both guide them in career terms (as opposed to shoving them into jobs!) and seek out the right kind of job opportunity for the maximisation of their potential.

One of the problems I am often confronted with is the client's reluctance to consider salesmen above the age of forty.

There is without any doubt a prejudice on the part of many sales managers against salesmen who have achieved middle age. (Whatever that might be!) Where it stems from I don't know, other than stupidity, lack of experience or personal insecurity.

Let us consider the situation from a broad standpoint. There is no age group which has a monopoly on lazy sods. In general terms the individual either has or has not industry, self-motivation, enthusiasm, commonsense, initiative, etc — from the cradle to the grave. The "Old bull and the young bull" syndrome is very pertinent to the selling arena. (Surely you know that one! In essence — Young bull to old bull: "Let's run down the hill and screw one of those cows." Old bull to young bull: "No. Let's walk down and screw them all!")

The typical salesman starts his sales career around the age of 25. Assuming a retirement age of 65, he is only half-way through his career at 45!

It is apparently quite acceptable for a sales manager to be middle-aged, but of course most salesmen never make it that far. I would guess the chances are not better than one in six, so what do these people with such prejudice imagine happens to the other five? It seems they have achieved premature sales senility at the point popular belief tells us is the stage at which the individual is most able to exploit his or her life experience.

"Life begins at forty," that old song proclaims. Some sales managers would rather have us believe that it is the end of the road.

Age is very much an emotive topic with heavy subjective overtones. Any ninety-year-old will refer to their offspring as youngsters. Age, from the standpoint of the individual, is relative. Youth could be described as ten years younger than whatever age you happen to be at the time.

I am glad to say that very few of my company's clients are prejudiced against any particular age-group. Hopefully we have made some contribution towards broadening their outlook in this context. However, there are some basic ground rules that we apply.

Our basic guideline is that at fifty the salesman's experience qualifications in terms of selling product and application must be a perfect fit. At forty he must have extensive selling experience and have a thorough knowledge of the marketplace, although some shortfall on either product or application is acceptable — but not on both. Forty-year-old trainees are not usually a very smart idea in the context of selling.

At the other end of the scale, a person in his or her early twenties seeking a selling role and having no track record at all may be quite acceptable by virtue of their human characteristics and academic qualifications.

In other words the older salesmen are, the more their experience needs to be broad and relevant.

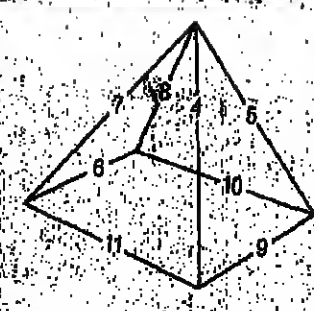
I have often heard the expression "Selling is a young man's job." In my first selling job I was expected to achieve 150 sales calls per week! I can't say that I would relish the thought of expending so much energy for such little return today, but I like to think that is a function of experience and commonsense rather than a need for Phyllosan.

We have put many mature guys into senior selling roles over the years of whom I can honestly say their average level of success and stability has been of a higher order than that of counterparts in their twenties.

A few weeks ago I had the pleasure of meeting a salesman whom we put into his present job when he was in his middle fifties. He joined a hard-hitting, heavily sales-orientated company, well known for its excellent products and aggressive stance in the marketplace.

They were very uncertain about taking him on when I first spoke to them but they gave in to my persuasion. It was nice to hear he has never subsequently been below sales quota, and is currently top salesman.

Puzzle Answer



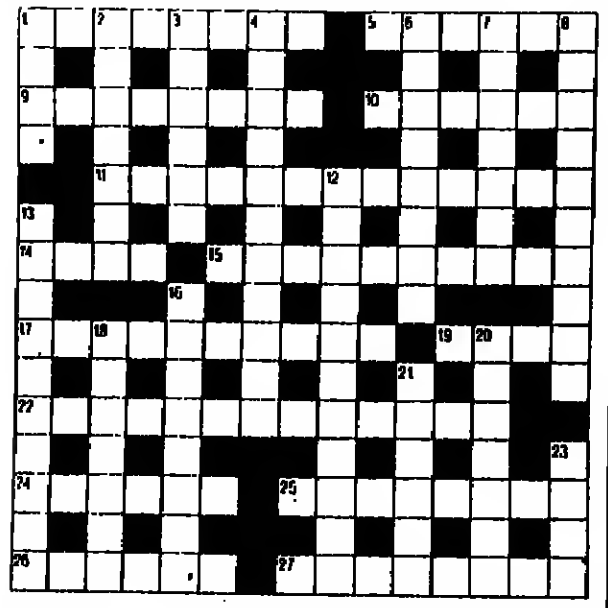
BEAR in mind that there are *five* vertices, and also that each integer serves two vertices. So "twice the sum of the eight integers" must be divisible by 5. This narrows down the possibilities very considerably, with 4—11 = 60 and 9—16 = 100 as the lowest two valid sets of eight.

The first of these does in fact give the only possible solution, with a constant of 24.

CW Prize Crossword No 6

Compiled by Alec Robins

A PRIZE of £10 will be awarded for the first correct entry opened. The second and third correct solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU, by first post Friday, July 11. Please use a ballpoint to complete the crossword.



Name .... (Miss, Mrs, Ms, Mr)

Address ....

....

Telephone ....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed .... Date ....

ACROSS

1 Destructive, endless conflict left us ruined (8)
5 Increase the rate of backing favourites, getting ahead (4, 2)
9 Passes on the money from the sale (8)
10 A great many round about all rejected solid alcohol (6)
11 Ideal prediction by prophet, yet it makes one tense (6-7)
14 Dorothy sent back ring, causing a commotion (2-2)
15 Educational classic, tho' in need of revision (10)
17 Refresher course initially given by former exhibitor (4,6)
19 It's not completely perfect, it's thought (4)
22 Suitable beach pastries produced in irregular bursts (4,3,6)
24 What a rowdy football fan may use, to irritate (6)
25 Arrived, in the swirling rain, privately (2,6)
26 A mixed drink, also swallowed in the course of retiring (6)
27 Lily-like plant lad hopes will be propagated (8)

DOWN

1 Parking in the rain, dripped (4)
2 Hoaxed — therefore, holding work up, had a meal (7)
3 Level the highway up for parts of a sports programme (6)
4 Awful dunce, our lad, in disgrace (5,1,5)
6 A word of rebuke over one in exam sitting with instructor (8)
7 Seize up when in harbour — it's an evil omen (7)
8 Discreet Scot, one who aspires to the Premiership? (10)
12 Church members make publicity expert experiment on the workers (11)
13 More than one place where what is lower gets raised? (5,5)
16 Attacked a ship, one I captained (8)
18 A title I concocted for a girl (7)
20 Swell acted, gripping machine-gun (7)
21 Begin drawing a spot of Beaujolais before the fish appears (6)
23 Stir love in a girl (4)

Rules and Conditions

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printers employed by them or the near relatives of any such staff.
3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
4. Winners will receive their prizes during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters relating to the competition shall be final. No correspondence will be entered into.

Books for the addicts

TWO books that, as their titles indicate, are for the discerning crossword doer, and for the addict, have been produced by Alec Robins, the compiler of Computer Weekly's puzzle. Both books consist of puzzles that originally appeared in the Competitors Journal with the odd one or two from the Guardian. Robins introduces each collection with a detailed analysis of the art of compiling crosswords and gives some useful hints about the tricks of the trade used by the compiler to conceal the answers.

For any crossword buff these books are good value for money at 75p each.

Crossword for the Addict and Crosswords for the Discerning, both by Alec Robins. Published as a Paperfront by Elliot Right Way Books, Kingswood Buildings, Lower Kingswood, Tadworth, Surrey KT20 6TD.

ICI

ICI CORPORATE LABORATORY
PRODUCTION SYSTEMS GROUP

COMPUTER SCIENTIST

ARTIFICIAL INTELLIGENCE

The Corporate Laboratory of ICI is responsible for the Company's long-term research. Much of this research is carried out in collaboration with the Company's manufacturing Divisions and with Universities.

The production Systems Group is a multi-disciplinary team presently engaged in an ambitious research programme aimed at designing and developing new ways of using computer systems to support managerial decision-making. At present its primary research areas are computer modelling, man-machine interaction, real-time computing and communications networks.

We now need a high-calibre computer scientist to help us extend our research programme to evaluate and exploit recent developments in artificial intelligence and knowledge engineering. This is an exciting opportunity for a person with initiative and imagination to investigate the potential of a challenging new technology of the 1980s in the context of real-life problems. This will involve close collaboration with the Machine Intelligence Research Unit at Edinburgh University.

The suitable candidate will be a graduate in computer science, possessing an honours degree in the subject. Familiarity with the concepts and techniques of artificial intelligence is desirable but not essential.

The post, which is located at Runcorn, Cheshire, carries an attractive salary and good conditions of employment, together with wide opportunities for career development.

Apply to Miss S. E. Bird, Personnel Officer, P.O. Box 11, ICI Corporate Laboratory, The Heath, Runcorn, enclosing full C.V., or ring Runcorn 73456, ext. 3711, for application form.

(1793)

TRAIN IN U.S.A.

CUSTOMER ENGINEERS

£8,000 + CAR + + + +

One of our top minicomputer clients have asked us to find keen young engineers for London/Home Counties to be trained up on their computer product range. If you have computer/peripherals experience and are looking for variety, customer contact, problem solving and promotion, then check these benefits: Salary £8,000 — Two bonus schemes — overtime — standby — free B.U.P.A., non-contributory pension — 2 litre estate — biannual review + training.

Interested? Then call now.

Ref. E.K. 2066

(1660)

AB EXECUTIVE (KINGSTON) LTD.
01-549 6441

NEAT 3
NEW YORK
01-606 8900 (DAY)
or 0804 711209
EVENINGS and WEEKENDS

Polaroid Ireland is part of an international high quality photographic equipment and supplies company that is presently constructing a technical centre at Newbridge, Co. Kildare. The Company's machine construction programme of automated film equipment is well under way, in preparation for the initial production phase.

Applications are invited from experienced personnel to fill the following appointments:-

ANALYST/PROGRAMMERS

The selected candidates will join a small dynamic team that has responsibility for implementing a range of manufacturing and financial systems for the Irish operation some of which are utilised by Polaroid in their overseas subsidiaries. The operation is based on RJE and on-line terminals linked to our European datacentre in Scotland which uses IBM 370/148 running under OS-VSI and IMS DB/DC.

Candidates must be experienced in Cobol and ideally have a knowledge of OS/JCL.

Prospects for career development in our recently established Irish organisation are excellent.

Salaries and conditions of employment are very attractive and relocation expenses will be paid.

Please write, providing a brief career summary initially, to:

The Personnel Manager, *or* **The Placement Officer,**
Polaroid Ireland Ltd, National Manpower Service,
Newbridge, 4/5 Drewsboro Buildings,
Co. Kildare. Newbridge, Co. Kildare.
Tel: (045) 31333. Tel: (045) 31372.

Polaroid

DP MANAGER

C. LONDON to £8,500 + CAR
2 x NCR 8200

An excellent opportunity has arisen for someone to take charge of a small but extremely busy twin NCR8200 installation in Central London, which provides vital aid to the management of a major importer. Both the Company and the installation have a substantial and continuing growth pattern, and the person appointed must be a lively and capable manager who enjoys being totally involved. There are six operations staff and the majority of systems and programs are written externally, but at times the manager will need to work personally in all these areas.

If you have these skills and are full of vitality and enthusiasm, call Clive Williamson NOW for further details and an application form.

COMPUTER and MANAGEMENT PERSONNEL
75 Little Britain, London, E.C.1
Tel. 01-606 8800 (24-hour service)

(1841)

CLASSIFIED COPY

All classified copy should reach our offices no later than 3.30 p.m. on the Monday preceding Thursday's publication.

If complete artwork is supplied, 11 a.m. on a Tuesday.

Ring Ray Kelly for further details on 01-261 8016.

UNIVERSITY OF SALFORD

MANAGEMENT SERVICES OFFICER

£10,142-£12,864 (under review)

Applications are invited for the post of Management Services Officer in the Registrar's Department at the University. The person appointed will be directly responsible to the Registrar for the management of the administrative computer unit and for the continued development of data processing facilities for the department.

Further particulars available from the Registrar, University of Salford, Salford M5 4WT, to whom letters of application, giving details of age, experience and qualifications, together with the names of two referees should be sent by [illegible] July 1980 quoting reference [illegible].

METROPOLITAN BOROUGH OF
Rochdale
TREASURER'S DEPARTMENT

COMPUTER PROGRAMMER (2 posts) AP 2/5 £3,990/£6,381

Applications are invited from experienced Programmers to fill the above-mentioned positions. Starting salary will be dependent upon experience i.e. candidates with one year's relevant experience would receive a minimum of £4,581 per annum.

On-line and batch development is planned in the near future using VME/K on a 2960 Mainframe.

Removal expenses, etc. and assistance with accommodation may be payable in appropriate cases.

APPLICATION FORMS AND FURTHER DETAILS are available by quoting Ref. No. D950 from the Chief Personnel Officer, P.O. Box 39, Floor 9, Municipal Offices, Smith Street, Rochdale OL16 1XS (tel. Rochdale 47474, ext. 562) to whom they should be returned by MONDAY, 14th JULY, 1980.

1. PDP11/34 Programmers £6,000
Surrey/Sussex border based company seek programmers with commercial mini computer experience for design projects.

2. BASIC Plus £6,500
Bedfordshire based. Programmers with BASIC Plus experience under RSTS for Banking/Financial projects.

3. Senior Programmers To £9,000
Hertfordshire based client requires DEC experience people for Database systems.

4. Programmers To £10,000
Hampshire based firm requires PDP11, MACRO11, and RSX11 experience, pref. degree background.

5. Senior R.T. Programmers To £13,000
London firm require experienced candidates with minimum 5 years' in minis including PDP 11s.

6. Analyst/Programmer £ Neg.
Oxon based firm using DEC and Micros require candidates for Real-time control monitoring systems.

7. BASIC+COBOL £7,500
Berkshire based company require 3 years' experience of DEC based commercial and financial systems.

8. MUMPS £ Neg.
Berkshire based firm with 11/34 require MUMPS experience for a variety of applications systems. CW50/

1. ICL 2900 £ Neg. + Car
Slough based firm require ICL COBOL programmers with VME/B or VME/K experience. Driving Licence essential

2. BURROUGHS COBOL To £6,000
London based firm requires 2 years' COBOL to assist in the development of a variety of commercial systems

3. UNIVAC 1100 £6,500 + Car
London based requirements for programmers with 18 months' plus experience of COBOL on 1100 Series

4. NCR Analyst/Programmer £7,500
London based firm requires NCR COBOL and NEAT/3 experience.

5. UNIVAC 1100 £10,000
Manchester based firm requiring 1100 experience to design and implement new real time database systems.

6. Senior Analyst/Programmer To £10,000
London based ICL 2904, small team, minimum 4 years' experience in COBOL, RPGII, developing new financial systems.

7. ICL Programmers £7,000
West London based firm requires 1900 COBOL programmers to work both large 1900 and 2900.

8. Analyst/Programmer Consultant £11,500
City based position, degree plus minimum 2 years' COBOL and design experience + Banking experience. CW 56

1. Senior Business Analyst £11,500
London-based position requires Analyst with business management experience

2. Senior Systems Analysts £10,000 + Mortgage
City-based financial firm require 6-years' analysis experience. Profit sharing, BUPA, House and Personal Loans Schemes

3. Systems Analyst £6,500
Croydon Electronics firm require Analyst with 2 years' experience plus IBM programming background. Communications systems.

4. Systems Analyst To £9,000
Surrey-based position, required 2 years' Systems Development experience for Production and Financial Systems.

5. Senior Systems Analyst £9,000
East London based, commercial systems designing and implementing new systems. ICL background useful

6. Systems Analyst £6,000
London-based, 3 years' systems design experience required. IBM Database systems

7. Systems Designers To £12,000
Manchester firm, to help design an integrated database on-line system.

8. Systems Analyst £10,000 + Mortgage
City-based International Bank, require analysts to work on new development projects. CW 64

Scientific Programmers

1. Real-Time Programmers To £12,000
Hampshire-based consultancy require people for Defence and Military Systems: CORAL experience necessary.

2. Fortran Programmers To £12,000
West London firm requires experience of numerical Control.

3. Real-Time Designers To £10,000
Cheshire located firm require DEC, MACRO, FORTRAN and CORAL for Defence and Radar Systems.

4. Programmers/Designers To £11,000
North London-based firm require Telecomms people with high-level languages for telemetry systems.

5. Systems Engineers To £10,000
Staffordshire-based, minimum 4 years' experience of mini/micro-based systems for military projects.

6. Analyst Programmers £ Neg.
South Coast-based, experience in R.T., comms. compilers and operating systems for advanced comms projects.

7. Technical Support £ Neg.
London-based. FORTRAN experience to provide programming support for packages.

8. Coral 66 £10,000
London-based consultancy require Real-Time Programmers for micro-based communications and signal processing systems. CW52/

Software Engineers

1. Analyst/Engineers £9,000
London-based firm require Engineers with degree plus minimum 2 years' experience of Structural Analysis and Design.

2. Electronic Engineers £Open
Dorset-based firm require Degree-level Engineers.

3. Software Designers To £10,000
Staffordshire firm require Programmer/Designers for military systems using CORAL or FORTRAN.

4. Assembler Programmers To £10,000
London firm, become involved in design and development of new telecomms projects.

5. Software Designers To £11,000
Middlesex-based, degree background, experience in flight simulation and telemetry systems.

6. Realtime Designers TO £11,000
West London firm, design of A.T.E. Process Control and Message Switching systems.

7. Design Engineers TO £10,000
Sussex-based firm require experience in high-level languages for Aircraft Simulation Systems. DEC machines.

8. Senior Software Engineer To £10,000 + Car
Berkshire client requires candidates with minimum 5 years' experience of R.T. Systems and compiler writing. CW53/

IBM Programmers

1. PL/1 or Assembler Programmers £7,500 +
London-based company seeks 4 Programmers with PL/1 or Assembler to join Database/Teleprocessing projects.

2. Cobol Programming £ Neg.
Leeds-based firm require COBOL experience on on-line, real-time automated, buying and planning systems

3. RPGII £7,500
Buckingham-based, small team require Programmer with minimum of one year's RPGII experience.

4. Senior Programmer £6,000 + Bonus
Berkshire firm require several years' of PL/1 experience for new real-time and database systems.

5. PL/1 Programmers £8,500
North London-based firm requires good PL/1 experience to work on Real-Time telecommunications systems.

6. DS/VS1 Cobol To £10,000
Croydon-based firm seeks Cobol Programmers at all levels to assist in development of large Real-Time Systems.

7. Assembler Programmer To £10,000
South London-based firm required minimum 2 years' experience of OS Assembler for T.P. Systems.

8. DOS/VS Cobol £7,500
South Coast-based firm seeks Cobol Programmers at all levels for development of future IBM 4341. CW51/

Irish Assignments

1. Co. MAYO based manufacturing company require RPGII Programmers. £7,000+

2. DUBLIN South company seeks Systems/Analyst with commercial background. £9,500

3. CORK based Co. requires D.P. Manager for IBM 380 with manufacturing experience. £10,000+

4. LIMERICK Electronics firm requires Programmer/Analysts with RPGII exp. £8,500

5. DUBLIN Software House seeks Programmers with DEC experience. To £8,000

6. SLIGO based company requires RPGII Programmers/Analysts. £7,500+

7. DUBLIN based Electronics Company requires Systems/Analysts with COBOL and manufacturing experience. c£10,000

Please apply to Gerald Delamere of CCC at Canberra House, 24 Lower Leeson Street, Dublin 2. Tel. Dublin 789577. CW57/

Overseas Assignments

1. GERMANY DM 50,000 +
German speaking candidates with experience of mini software or micro systems.

2. HOLLAND £ Neg.
Systems programmers with PDP experience for Real Time Telephony systems.

3. GERMANY DM 60,000 +
IBM DOS/VS Systems Programmers for Hamburg and Munich.

4. FRANCE Fr 150,000
IBM Systems Programmers with big machine experience MVS, VM for large IBM Network.

5. SWITZERLAND SFR 55,000
Software Engineers with experience of process control to work on Power Stations systems.

6. SWITZERLAND SFR 55,000
German speaking Technical Writer, to work on Documentation for Real Time telecomms project.

7. GREECE Dr 35,000 p.m.
Fluent Greek required for Programmer with COBOL experience to work on commercial mini based systems.

8. SWITZERLAND SFR 60,000
IBM Systems Programmer with experience of OS/VS1, CICS and pref. DL/1 for joint responsibility on an IBM 3031. CW55/

IBM Systems Programmers

1. DOS/VM Systems Programmer £9,500 +
City based, to take full responsibility of systems programming with the arrival of 4341 next year.

2. OS/MVS Expertise £10,000 +
Sussex based, several years' experience required for consultancy role.

3. OS/VS1 £6,000 + Mortgage
City based, 2/3 years' experience of OS plus VM/370 and CICS pref. DEC Network.

4. Real Time Programmer £8,500
Croydon based firm seeks ASSEMBLER experience for Database and communications projects.

5. Systems Programmers £ Neg. + Mortgage
London-based Insurance Co. 2 years' experience of Operating systems MVS, TSO, VTAM, etc.

6. MVS Systems Programmers £12,000
London based consultancy requires experienced Systems Programmers for U.K. and overseas assignments.

7. HAMBURG — Systems Programmer DM 60,000 +
370/138, DOS/VS, CICS, Company requires Systems Prog. to take over the full function. CW58/

Central Computing Consultants

8 Lower Grosvenor Place London SW1 Telex 918582

01-834 7105 CCC

Name
Address
Phone: Home Office
Position applied for Ref.

Central Computer Consultants
Freepost, London SW1W 0BR